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Using the Passport 8683POS Module

NORTEL
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Preface

The Passport® 8683POS Module is part of the Nortel Networks Passport® 8600 Series line of communications products. This module is the Passport Packet over SONET (POS) module for the Passport 8600 chassis. This guide describes the features and operations of the Passport 8683POS Module and provides instructions for installing and managing the module.

Before you begin

This guide is intended for network installers and system administrators who are responsible for installing, configuring, or maintaining networks. This guide assumes that you have the following background:

- Understanding of the transmission and management protocols used on your network
- Experience with windowing systems or graphical user interfaces (GUIs)

Text conventions

This guide uses the following text conventions:

angle brackets (< >)	<p>Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command.</p> <p>Example: If the command syntax is <code>ping <ip_address></code>, you enter <code>ping 192.32.10.12</code></p>
bold Courier text	<p>Indicates command names and options and text that you need to enter.</p> <p>Example: Use the dinfo command.</p> <p>Example: Enter show ip {alerts routes}.</p>
braces ({ })	<p>Indicate required elements in syntax descriptions where there is more than one option. You must choose only one of the options. Do not type the braces when entering the command.</p> <p>Example: If the command syntax is <code>show ip {alerts routes}</code>, you must enter either <code>show ip alerts</code> or <code>show ip routes</code>, but not both.</p>
brackets ([])	<p>Indicate optional elements in syntax descriptions. Do not type the brackets when entering the command.</p> <p>Example: If the command syntax is <code>show ip interfaces [-alerts]</code>, you can enter either <code>show ip interfaces</code> or <code>show ip interfaces -alerts</code>.</p>
ellipsis points (. . .)	<p>Indicate that you repeat the last element of the command as needed.</p> <p>Example: If the command syntax is <code>ethernet/2/1 [<parameter> <value>] . . .</code>, you enter <code>ethernet/2/1</code> and as many parameter-value pairs as needed.</p>

italic text

Indicates new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore.

Example: If the command syntax is
`show at <valid_route>`, *valid_route* is one variable and you substitute one value for it.

plain Courier
text

Indicates command syntax and system output, for example, prompts and system messages.

Example: Set Trap Monitor Filters

separator (>)

Shows menu paths.

Example: Protocols > IP identifies the IP command on the Protocols menu.

vertical line (|)

Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command.

Example: If the command syntax is
`show ip {alerts|routes}`, you enter either
`show ip alerts` or `show ip routes`, but not both.

Related publications

For more information about Passport 8600 series products and management software, refer to the following publications:

- *Installing the Passport 8683POS Module MDAs* (part number 209565-A)
- *Getting Started with the Passport 8000 Series Management Software* (part number 209663-C)
- *Using the Passport 8600 Modules* (part number 207306-C)
- *Installation Instructions for the Passport 8600 Modules* (part number 207372-C)
- *Networking Concepts for the Passport 8000 Series Switch* (part number 207307-C)
- *Passport 8000 Series Network Design Guidelines, Release 3.0 Implementation Notes* (part number 210128-A)
- *Reference for the Passport 8000 Series Command Line Interface Switching Operations Release 3.1* (part number 207308-D)
- *Reference for the Passport 8000 Series Command Line Interface Routing Operations Release 3.1* (part number 208967-C)
- *Reference for the Passport 8000 Series Management Software Switching Operations Release 3.1* (part number 207414-D)
- *Reference for the Passport 8000 Series Management Software Routing Operations Release 3.1* (part number 207415-C)
- *Release Notes for the Passport 8000 Series Switch* (part number 211014-A)

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Chapter 1

About the Passport 8683POS Module

The Passport 8683POS Module provides network transmission using packet over Synchronous Optical Network (SONET) services. The Passport 8683POS Module for the Passport 8600 series routing switches provides WAN support to the Passport product line by allowing access to SONET services in the metropolitan area. Where multiple campuses exist in a single metropolitan area, you can connect these campuses without compromising performance or increasing complexity.

The Passport 8683POS Module is a baseboard with slots for three of the following two optional media dependent adapters (MDAs):

- 1-port OC-12c/STM-4: single-mode fiber (SMF) or multimode fiber (MMF) using SONET/SDH
- 2-port OC-3c/STM-1: SMF or MMF using SONET/SDH

The Passport 8683POS Module supports up to six input/output (I/O) OC-3c/STM-1 lines and up to three I/O OC-12 lines. You can mix these MDAs on a single Passport 8683POS Module. For example, you can put an OC-12 MDA into the first slot and OC-3 MDAs into the two remaining slots. For information on OC lines, PPP, and SONET, refer to [Chapter 2, “Using the Passport 8683POS Module,” on page 29](#).

You can put more than one Passport 8683POS Module in the Passport 8600 series chassis, except slots 5 and 6, which are reserved for the Passport 8690 Switch Fabric (SF) modules. The maximum number of modules on a chassis is four.

One Passport 8690 SF module acts as the CPU for the chassis, and the other module is the standby CPU, taking over in case of failure. If a CPU failover occurs, all traffic on the chassis stops momentarily while the standby CPU reinitializes all input/output modules.

Refer to *Networking Concepts for the Passport 8000 Series Switch, Release 3.1* for a thorough discussion of the complete functionality of the Passport product line, including the Passport 8683POS Module.

This chapter provides the following information about the Passport 8683POS Module:

- [“Features,”](#) next
- [“Physical description”](#) on page 25

Features

The Passport 8683POS Module has the following features:

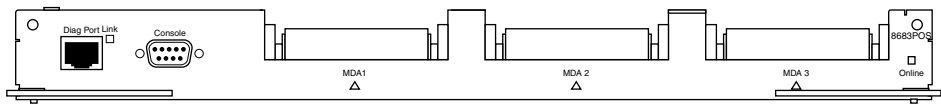
- SONET and SDH compliant, supporting OC-3c/STM-1 and OC-12c/STM-4 framing
- Front-panel LEDs to monitor port activity and module operation
- Ability to remove and install a module (hot-swap) without resetting the switch
- MTBF of 150,000 hours
- Internal and external loopback support on all ports for testing purposes
- Hardware diagnostics
- Brouter port configuration
- Bridging support: RFC 1638-compliant
- Routing support for both unicast and multicast IP and IPX routing
- Support for both single-mode fiber (SMF) and multimode fiber (MMF) cabling
- Support for DVMRP
- Support for IGMP
- Support for MultiLink Trunking (MLT)
- Support for the following VLAN features currently implemented in the Passport switches including:
 - Port-based VLAN
 - Policy-based VLANs (protocol-based, IP subnet-based VLANs)
 - IEEE 802.1Q tagged VLANs
- Support for the following RFCs:

- PPP over SONET: RFC 2615
- SONET/SDH: RFC 2558
- PPP: RFC 1471, RFC 1473, RFC 1474, and RFC 1661
- LQM: RFC 1989
- SNMP: RFC 1213
- IPCP: RFC 1332
- IPXCP: RFC1552
- BCP: RFC 1638_
- Multiple spanning tree groups - bridge mode only
- Manageable through the Passport CLI or Device Manager, the SNMP-based graphical user interface
- Monitored through a World Wide Web browser from anywhere on the network

Physical description

The Passport 8683POS Module ([Figure 1](#)) is a single-slot module for the Passport 8600 series chassis. Online LEDs indicate module operation.

Figure 1 Passport 8683POS Module



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To configure and manage the Passport 8683POS Module, connect to the Passport 8690 SF module. For information on connecting to the Passport 8690 SF console port, refer to *Using the Passport 8600 Modules*.

Media dependent adapters

The Passport 8683POS Module has slots for three media dependent adapters (MDAs) that have their own LEDs. You can use up to three of the following MDAs with the Passport 8683POS Module:

- 1-port OC-12c/STM-4: SMF or MMF using SONET/SDH
- 2-port OC-3c/STM-1: SMF or MMF using SONET/SDH

You can mix these MDAs on the Passport 8683POS Module.

[Figure 2](#) shows the OC-12c/STM-4 MDA, and [Figure 3](#) shows the OC-3c/STM-1 MDA.

Figure 2 1-port OC-12c/STM-4 MDA

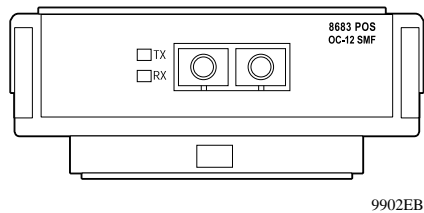


Figure 3 2-port OC-3c/STM-1 MDA

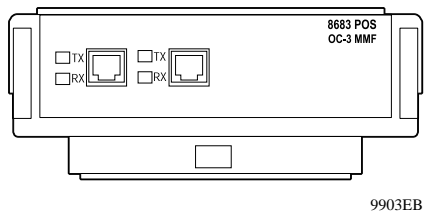
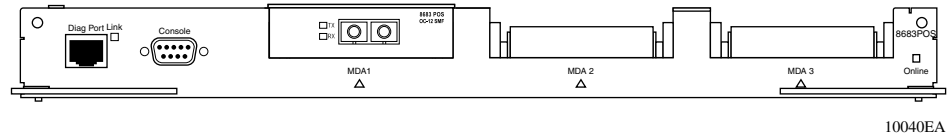


Figure 4 shows the Passport 8683POS Module with the OC-12c/STM-4 MDA installed. (For information on installing the MDAs, refer to *Installing the Passport 8683POS Module MDAs*.)

Figure 4 Passport 868POS module with an OC-12c/STM-4 MDA



Online LED

The front panel of the Passport 8683POS Module has an Online LED that indicates whether or not the module has power applied and is initialized correctly.

When the Passport 8683POS Module is first inserted into the chassis, the Online LED turns amber until the board is recognized by the system and passes a power-on self-test. If the module fails the self-test, the light is off. When the board passes the self-test and goes online, the LED illuminates a solid green.



Note: You cannot configure the Passport 8683POS Module until the online LED on the module is steadily lit green and you have inserted at least one MDA.

Table 1 lists the Passport 8683POS Module online LED indications.

Table 1 Passport 8683POS Module online LED indications

Online LED	State
Off	Card is not receiving power.
Amber	Card is initializing or downloading.
Amber	Card is offline.
Green	Card is online.

MDA LEDs

Table 2 lists the MDA LED indications.

Table 2 MDA LED indications

Tx LED	Rx LED	Port State
Amber	Amber	AdminDown/Out-of-Service
Off	Amber	AdminUp/In-Service/Sonet-alarm-condition
Amber	Green	AdminUp/In-Service/Sonet-Up/PPP link down
Off	Green	AdminUp/In-Service/Sonet-Up/PPP-UP
Green (Blinking)	Green (Blinking)	Admin Up/In-Service/Traffic Activity

Console and Diag ports

Use the Console port on the Passport 8690 SF module to access management functions for the Passport 8683POS Module. For information on connecting to the console port on the Passport 8690 SF module, refer to *Getting Started with the Passport 8000 Series Management Software*.

The Diag port on the Passport 8683POS Module is used *only* by Nortel Networks personnel for debugging purposes. You can see diagnostic messages but you cannot input any text.

The Diag port on the module is an RJ-45 port that allows out-of-band management by Nortel Networks personnel.

Chapter 2

Using the Passport 8683POS Module

A typical application consists of a single Passport 8683POS Module in an Passport 8600 series switch, but multiple modules are also supported. This chapter briefly explains how the Passport 8683POS Module operates within the Passport switch.

A typical network application of the Passport 8683POS Module is a direct connection between one Passport 8600 series switch with a Passport 8683POS Module in one campus to an identical module in another Passport 8600 series switch at another campus connected over a SONET ring. Using this connection, you achieve an intercampus link through packet over SONET (POS) technology.

This chapter contains the following information:

- [“SONET transmission,”](#) next
- [“Spanning tree group feature”](#) on page 33

SONET transmission

You can connect the Passport 8683POS Module through a Synchronous Optical Network (SONET) termination multiplexor to extend the range of the wide area network (WAN) connections. Or, you can connect the Passport 8683POS Module, using fiber, directly to a POS interface on another Passport routing switch or on a traditional router.

The SONET frames received from the WAN contain IP packets encapsulated in Point-to-Point Protocol (PPP) that are converted by the Passport 8683POS Module into an Ethernet format. Similarly, the Passport 8683POS Module receives Ethernet frames and converts them into PPP packets for transmission over SONET.

SONET terms and acronyms

This section provides a brief listing of common Synchronous Optical Network (SONET) terms. SONET is a medium for transmitting data that uses fiber-optic cables.

The following terms and acronyms are frequently used with SONET information:

- **SONET:** Synchronous Optical Network. SONET is a family of fiber optic transmission rates that provides the flexibility to transport many digital signals with different capacities. This ANSI standard provides for transmission from OC-1 to OC-48 and greater.
- **SDH:** Synchronous Digital Hierarchy. SDH is a standard technology for optical fiber-based synchronous data transmission. SDH is the international equivalent of SONET.
- **OC-3c/STM-1:** Optical Carrier-level 3 concatenation. OC-3c/STM-1 is an optical fiber transmission system that carries STS-3c/STM-1 frame structures at 155 Mb/s. Concatenation refers to the fact that there is only one logical data stream (rather than supporting a channelized structure).
- **OC-12c/STM-4:** Optical Carrier-level 12 concatenation. OC-12c/STM-4 is an optical fiber transmission system that carries STS-12c/STM-4 frame structures at 622 Mb/s. Concatenation refers to the fact that there is only one logical data stream (rather than supporting a channelized structure).
- **POS:** Packet over SONET.
- **PPP:** Point-to-Point Protocol. PPP encapsulates common network-layer protocols in specialized Network Control protocol packets, such as IP over PPP (IPCP) and IPX over PPP (IPXCP), and BCP. Thus, it enables sending multiprotocol data over point-to-point links.

SONET/SDH transmission rates

The following transmission rates are commonly used with SONET:

- **OC-3c/STM-1:** 155.52 Mb/s
- **OC-12c/STM-4:** 622.08 Mb/s

The SONET specification defines optical both as:

- Single-mode fiber (SMF)
- Multimode fiber (MMF).



Note: The estimated maximum transmission distance for OC-3c SMF is 20 kilometers (km); for OC-3c MMF is 2 km; for OC-12c SMF is 15 km; for OC-12c MMF is 500 m.

Point-to-Point Protocol

The PPP family of protocols is divided into three categories:

- Control protocols control operation and maintenance of the PPP link.
- Network protocols describe the encapsulation methods needed to move multiprotocol network traffic over the PPP interface.
- Network control protocols are used to configure, manage, and control the operation of the network protocols. The Passport 8683POS Module uses the Link Control Protocol (LCP) and the Link Quality Report to monitor the link.

PPP goes through the following basic initialization phases when bringing up links:

- Link establishment
- Network layer protocol

Establishing the PPP link

The Link Control Protocol (LCP) of the PPP helps establish a link. LCP generates three types of packets:

- Link configuration packets, including configure-request, configure-ACK, configure-NAK, and configure-reject packets
- Link termination packets, including terminate-request and terminate-ACK packets
- Link maintenance packets, including code-reject, protocol-reject, echo-request, and echo-reply packets

When two devices initialize a PPP dialog, each sends a configure-request packet to the other. Each configure-request packet contains a list of LCP options and corresponding values that the sending device uses to define its end of the link.

For example, a configure-request packet may specify the link's maximum transmission unit (MTU) size. The configure-request packet contains the user-configured values, which the sending device and the receiving device may need to negotiate.

When the receiving device gets a configure-request packet from the sending device, the receiving device responds with one of the following three types of packets:

- configure-ACK (that is, configure acknowledgment),
- configure-reject, or
- configure-NAK (that is, configure negative acknowledgment).

When the receiving device accepts the proposed LCP options, it responds with a configure-ACK packet. When the devices on each side of the link send and receive configure-ACK packets, the LCP advances to an open state, which means that the PPP interface can advance to the next phase. The devices converge.

When the configure-request packet from the sending device contains options that the receiving device is not willing to negotiate, the receiving device sends back a configure-reject packet specifying the nonnegotiable options. From that point on, configure-request packets from the sending device should eliminate the unacceptable options. When the sending device eliminates the offending options, the devices converge.

When the receiving device disagrees with some or all of the values of the proposed options in the configure-request packet, it responds with a configure-NAK packet. The configure-NAK packet notes the values that the receiving device disagrees with, and it includes the corresponding values that the receiving device would like to see in subsequent configure-request packets.

LCP negotiations between sending and receiving devices continue until either:

- Both devices converge (reach an agreement regarding the configure-request).
- The receiving device transmits a specified number of configure-NAK packets before sending a configure-reject packet.
- The convergence timer expires.

Negotiating network layer protocols

PPP uses various network control protocols to determine the values of parameters during network layer negotiations, which is the final phase of PPP initialization. Similar to the LCP, each network control protocol allows the devices to negotiate various network options over the data link by transmitting configure-request, configure-ACK, configure-NAK, and configure-reject packets.

Networks options include which network addresses to use and which media types to bridge. Once both devices agree upon network options, the network control protocol reaches the open state. The devices then begin transmitting user data packets for upper-layer protocols over the link.

Spanning tree group feature

The BPDU (Bridge Protocol Data Unit) format specified in RFC 1638 is enabled by default on the Passport 8683POS Module. If support for multiple spanning tree groups is required, the BPDU default format must first be disabled. For information on changing the STG format, see [“config pos ppp” on page 95](#).

Chapter 3

Installing the Passport 8683POS Module

This chapter describes the procedure for installing the Passport 8683POS Module. It covers the following topics:

- [“Safety and environmental precautions,”](#) next
- [“Installing the Passport 8683POS Module”](#) on page 37
- [“Verifying installation”](#) on page 40
- [“Initialization”](#) on page 40
- [“MDA insertion and configuration”](#) on page 42
- [“Replacing a module”](#) on page 43

For more information about the Passport 8600 chassis, refer to the following documents:

- *Getting Started with Passport 8000 Series Management Software*
- *Using the Passport 8600 Modules*
- *Installing the Passport 8600 Modules*

Safety and environmental precautions

Before you begin performing any installation or replacement procedure on the Passport switch, please note the following safe handling guidelines:

- To prevent damage caused by electrostatic discharge (ESD), handle the switch chassis and modules only when you, the chassis, and the chassis modules are properly grounded. Nortel Networks recommends the use of a grounding wrist strap.

- When handling modules, do not touch components on the modules; always handle modules by their edges. Store unused modules in their protective packaging.



Warning: Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume that fiber optic cables are connected to a light source.



Vorsicht: Glasfaserkomponenten können Laserlicht bzw. Infrarotlicht abstrahlen, wodurch Ihre Augen geschädigt werden können. Schauen Sie niemals in einen Glasfaser-LWL oder ein Anschlußteil. Gehen Sie stets davon aus, daß das Glasfaserkabel an eine Lichtquelle angeschlossen ist.



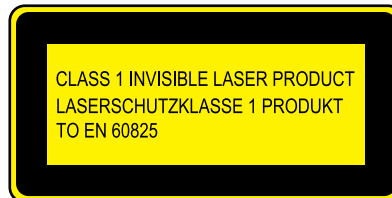
Avertissement: L'équipement à fibre optique peut émettre des rayons laser ou infrarouges qui risquent d'entraîner des lésions oculaires. Ne jamais regarder dans le port d'un connecteur ou d'un câble à fibre optique. Toujours supposer que les câbles à fibre optique sont raccordés à une source lumineuse.



Advertencia: Los equipos de fibra óptica pueden emitir radiaciones de láser o infrarrojas que pueden dañar los ojos. No mire nunca en el interior de una fibra óptica ni de un puerto de conexión. Suponga siempre que los cables de fibra óptica están conectados a una fuente luminosa.



Avvertenza: Le apparecchiature a fibre ottiche emettono raggi laser o infrarossi che possono risultare dannosi per gli occhi. Non guardare mai direttamente le fibre ottiche o le porte di collegamento. Tenere in considerazione il fatto che i cavi a fibre ottiche sono collegati a una sorgente luminosa.

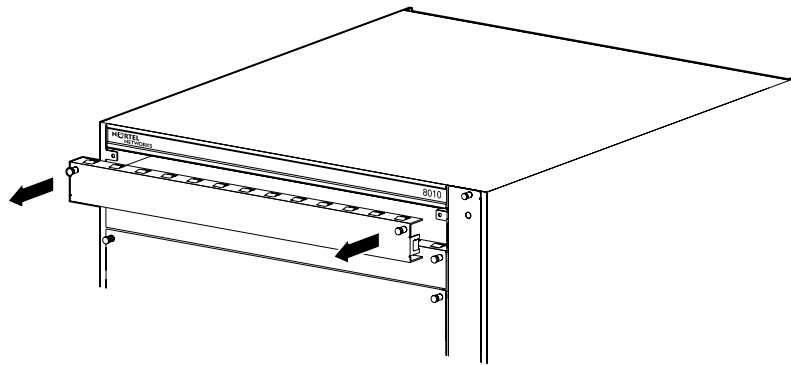

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Installing the Passport 8683POS Module

To install the Passport 8683POS Module:

- 1 Remove the filler panel from the module slot in the Passport 8000 series chassis (Figure 5).

Figure 5 Removing the filler panel



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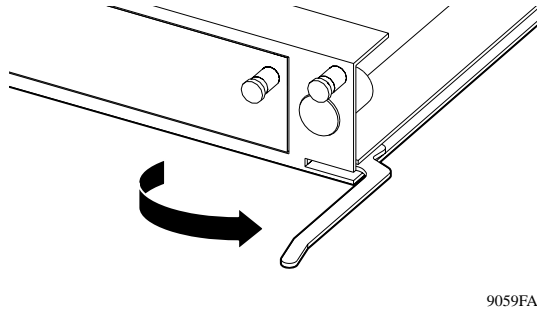


Note: If you are removing a module from the slot in which you want to place the new Passport 8683POS Module, be sure to:

- Remove all port interface cables
- Release the inserter/extractor levers of the I/O module, and swing them out.

- 2 Make sure the inserter/extractor levers are extended away from the Passport 8683POS Module front panel (Figure 6).

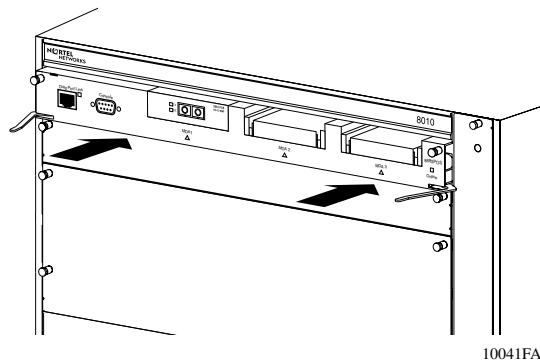
Figure 6 Extending the inserter/extractor levers



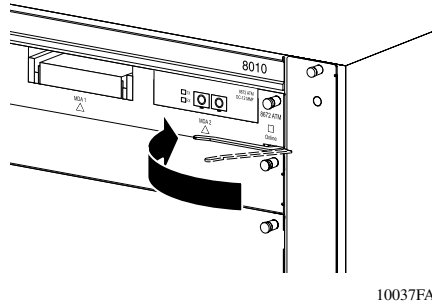
Note: Always handle an I/O module by the sides and carefully slide it out of the chassis. Place the module on a grounded work surface and in an antistatic bag for storage.

- 3 Handling the Passport 8683POS Module by the sides only, carefully align it with the card guides in the chassis. Slide the module into the slot until the module connectors touch the chassis backplane ([Figure 7](#)).

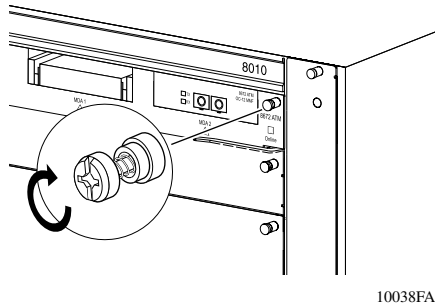
Figure 7 Inserting the Passport 8683POS Module



- 4 Rotate the inserter/extractor levers to seat the backplane connectors ([Figure 8](#)).

Figure 8 Closing the inserter/extractor levers

5 Tighten the retaining screws ([Figure 9](#)).

Figure 9 Tightening the retainer screws

6 Connect the interface cables.

You must install at least one MDA on the Passport 8683POS Module in order to pass traffic. For instructions on installing MDAs, refer to *Installing the Passport 8683POS Module MDAs*.

For information on configuring and managing the Passport 8683POS Module, refer to [Chapter 4, “Managing the Passport 8683POS Module,”](#) on page 45.

Verifying installation

The Passport 8683POS Module front panel has an Online LED that indicates whether or not the module has power applied and is initialized correctly. For information on online LEDs, see [“Online LED” on page 27](#).



Note: You cannot configure the Passport 8683POS Module until the online LED on the module is steadily lit and you have inserted at least one MDA.

Initialization

When the Passport 8683POS Module is installed into a Passport 8600 series chassis, ensure that the Passport 8690SF module in the same chassis has a PCMCIA card inserted and that the PCMCIA card contains the p80p3100.dld image, which supports the Passport 8683POS Module. For more information about the PCMCIA slot and the Passport 8690SF module, refer to *Using the Passport 8600 Modules*.

The Passport 8690SF module retrieves the image file *p80t3100.dld* to download to the Passport 8683POS Module. First, the Passport 8690SF module searches the host flash memory for the file, then the PCMCIA card. The Passport 8690SF module downloads the image file to the Passport 8683POS Module and identifies which MDAs are installed. The screen displays following message:

```
Downloading POS image to slot <number> .....Done (file
name and image size.)
```

If the image file is not found in either the flash memory or the PCMCIA, the screen displays this message:

```
POS image file name not found either in FLASH or PCMCIA.
```

If the image download is unsuccessful, the screen displays the following message:

```
Card is off line.
```

The Passport 8683POS Module requests a redownload from the Passport 8690SF module, and the screen displays this message:

```
Redownload requested by POS card in slot <number>.
```

The Passport 8683POS Module attempts a redownload three times. If the download is still unsuccessful, the Passport 8683POS Module goes offline and the screen displays this message:

```
Redownload of POS card in slot <number> failed maximum 3  
times; POS card is offline.
```

When the Passport 8683POS Module boots, the redownload count is reset to 0. After the image loads onto the Passport 8683POS Module, it performs a series of self-diagnostic tests. If the module fails the diagnostics, the screen displays the following message:

```
Port <number> for POS card in slot <number> failed  
diagnostics.
```

If you see this message, contact a service representative. For information on contacting service representatives, refer to [“How to get help” on page 21](#).

When the image successfully loads onto the Passport 8683POS Module, the screen displays the following message:

```
POS card in slot <number> is online.
```

The Passport 8690SF Module can download the image to multiple Passport 8683POS Modules in the same Passport 8600 series chassis simultaneously.



Note: If you accidentally delete the image file, reset the card and redownload the file. For information on how to reset the card, see [“Resetting the module” on page 50](#).

If you have one MDA installed, you can proceed to configure the Passport 8683POS Module.



Note: You must save your configuration (using either the CLI or Device Manager) to preserve the configuration changes you made to the Passport 8683POS Module across reboots.

MDA insertion and configuration

Once you insert an MDA, you must complete some basic configuration tasks for the Passport 8683POS Module to begin switching operations as soon as it completes initialization. For information on installing MDAs, refer to *Installing the Passport 8683POS Module MDAs*.

To verify that the Passport 8683POS Module is ready to receive and transmit traffic, check the LEDs on the module and the MDA. Once you enable the ports using the CLI or Device Manager, the online LED on the module lights steady green, and the module is ready. See [“Online LED” on page 27](#) and [“MDA LEDs” on page 28](#).

For information on enabling ports, refer to [“Enabling or disabling a port” on page 59](#).

You configure and manage the Passport 8600 series switch operation for your network using the command line interface (CLI) or SNMP-based network management software, such as Device Manager. For information on configuring and managing the Passport 8683POS Module, refer to [Chapter 4, “Managing the Passport 8683POS Module,” on page 45](#).

Factory default settings for the Passport 8683POS Module are shown in [Table 9 on page 54](#).

Replacing a module

You can hot-swap Passport 8683POS Modules as long as the module you are removing has the same MDAs installed as the module you are inserting. In this case, the system saves the configuration. If you hot-swap the module with a module that has *different* MDAs installed, you must reconfigure the module.

If you are hot-swapping modules, read the following section for information about how the routing switch recognizes replacement modules and how to avoid potential problems.



Warning: The Passport 8683POS Module itself is hot-swappable; the MDAs necessary to pass traffic on the module are *not* hot-swappable.

Starting the system after a module replacement

After you replace a module on your chassis, you can expect the following results:

- In a running system, when you replace an input/output (I/O) module with a module of the same type, the system restores the configuration of all the ports.
- When you replace a module with one of a different type, the system discards the configuration of the old ports, and the new ports are added to either the default VLAN or a null VLAN, depending on the operating mode of the switch.
- When you save the configuration in nonvolatile random access memory (NVRAM), turn off the switch, replace a module with a different module type, and turn the system on again, the system discards the configuration of the old ports, and adds new ports to either the default VLAN or an unassigned VLAN, depending on the operating mode of the switch.

Starting the system with an empty slot

When you save the configuration in NVRAM, shut down the system, remove a module, turn on the chassis *with that slot empty*, and then populate the slot with a module of the same type as the one previously there, the system is *not* able to restore the original configuration.

Chapter 4

Managing the Passport 8683POS Module

Two management tools enable you to manage the Passport 8683POS Module: Device Manager and command line interface (CLI). You can also use the embedded web-based management feature to monitor the Passport 8683POS Module. See [Chapter 7, “Web management,” on page 131](#) for information on using the web-based management feature.

This chapter contains information on these topics:

- [“Port numbering,” next](#)
- [“Device Manager” on page 46](#)
- [“Command line interface” on page 53](#)
- [“Configuration procedures” on page 54](#)
- [“Trap feature” on page 71](#)
- [“SONET loopback test feature” on page 75](#)

Port numbering

You must insert an MDA into the Passport 8683POS Module in order to have connectivity. The module contains three slots for MDAs, and you can mix and match from among the following MDAs, which are available (SMF and MMF):

- 1-port OC-12c/STM-4
- 2-port OC-3c/STM-1

The management system identifies an interface by its slot number in the Passport 8600 series chassis and its port number, using the syntax slot number/port number (s/p). Because the Passport 8683POS Module can have up to six ports with three 2-port MDAs inserted, port numbers 1 and 2 are reserved for the MDA in the left

slot regardless of the actual physical number of ports. Port numbers 3 and 4 apply to the MDA in the middle slot regardless of the actual physical number of ports; and port numbers 5 and 6 apply to the MDA in the right slot regardless of the physical number of ports.

For example, a Passport 8683POS Module in the second slot of the Passport 8600 series chassis with an OC-12c/STM-4 MDA in the left slot, an OC-3c/STM-1 MDA in the middle, and an OC-12c/STM-4 MDA in the right slot has the following port numbers for management and configuration:

- 2/1: OC-12c/STM-4
- 2/3: OC-3c/STM-1, left port
- 2/4: OC-3c/STM-1, right port
- 2/5: OC-12c/STM-4

As another example of port numbering, an Passport 8683POS Module in the second slot of the chassis with an OC-3c/STM-1 MDA in the left slot, the middle slot blank, and an OC-12c/STM-4 installed in the right slot has the following port numbers:

- 2/1: OC-3c/STM-1, left port
- 2/2: OC-3c/STM-1, right port
- 2/5: OC-12c/STM-4

A Passport 8683POS Module with three OC-3c/STM-1 MDAs installed has ports numbered consecutively 1 through 6, from left to right.

Device Manager

Passport Device Manager is an SNMP-based graphical user interface tool designed to manage single devices. In order to use Device Manager, you must have network connectivity to a management station running Device Manager on one of the supported platforms.

For detailed information on all aspects of installing and running Device Manager, refer to:

- *Getting Started with the Passport 8000 Series Management Software*
- *Reference for Passport 8000 Series Management Software Routing Operations*, and
- *Reference for Passport 8000 Series Management Software Switching Operations*.

This section describes the Device Manager features that are specific to the Passport 8683POS Module.

Device Manager access and passwords

[Table 3](#) shows the security access levels for the Passport 8683POS Module.

Table 3 Passport 8683POS Module access levels

Level of Access	Passport 8683POS Module feature
Level 1 (read/write)	SONET parameters
Level 2 (read/write)	All PPP bridging and Spanning Tree parameters
Level 3 (read/write)	All IP and IPX routing parameters

Refer to the *Reference for Passport 8000 Series Management Software Switching Operations* for information on using Device Manager to set the CLI login and access passwords.

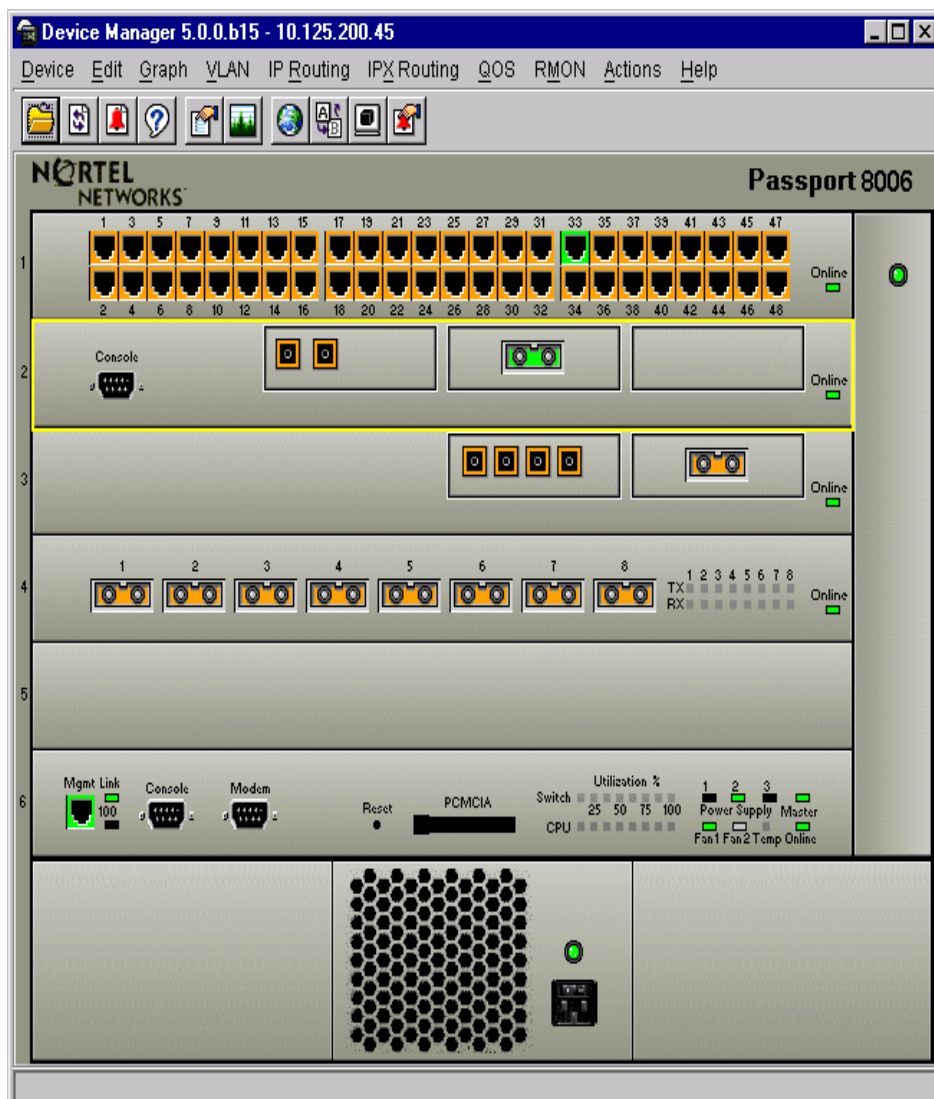
Installing Device Manager

To install Device Manager:

- 1 Download the Device Manager software from the CD.
- 2 Double-click the icon and follow the instructions on the screen.

When you launch Device Manager, a graphical image of the Passport 8600 chassis with the Passport 8683POS Module installed is displayed (Figure 10).

Figure 10 Passport 8600 series chassis with Passport 8683POS Module



The ports on the graphical image are color-coded to provide at-a-glance port status. Table 4 shows the status assigned to each color code.

Table 4 Passport Device Manager port color codes

Field	Description
Green	Port is operating.
Red	Port has been manually disabled.
Orange	Port has no link.
Light blue	Port is in standby mode.
Dark blue	Port is being tested.
Gray	Port is unmanageable.

Additionally, many Device Manager windows and dialog boxes contain buttons. Table 5 describes the function of these buttons.

Table 5 Passport Device Manager buttons

Field	Description
Apply	Applies the changes you entered to fields in a window or dialog box.
Refresh	Refreshes the information in the window. Each time you click Refresh, new information is polled from the switch and is displayed.
Close	Closes the window or dialog box and disregards any changes you made to fields.
Help	Does not function with the Passport 8683POS Module.
Insert	Inserts or creates new information.
Resize Columns	Resizes columns on the screen.



Note: You must always click Apply at the bottom of the tab to implement any changes you make.

Resetting the module

To reset the module:

- 1 Highlight the card.
- 2 Choose Edit > Card.

The Card dialog box opens with the Card tab displayed ([Figure 11](#)).

Figure 11 Card tab

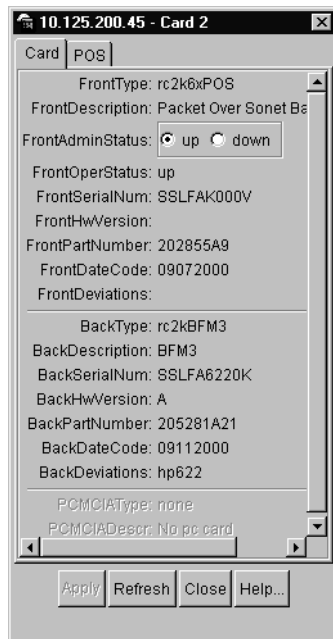


Table 6 describes the fields in the Card tab.

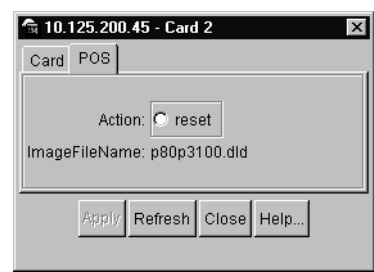
Table 6 Card tab fields

Field	Description
FrontType	Card type.
FrontDescription	Packet Over Sonet.
FrontAdminStatus	The administrative status of the card.
FrontOperStatus	The operational status of the card.
FrontSerialNum	Serial number of card.
FrontHwVersion	Hardware version.
FrontPartNumer	Part number.
FrontDateCode	Date code.
FrontDeviations	Deviations.
BackType	Card back type.
BackDescription	Description.
BackSerialNum	Serial Number.
BackHwVersion	Hardware version.
BackPartNumer	Part number.
BackDateCode	Date code.
BackDeviations	Deviations.

3 Click the POS tab.

The POS tab opens (Figure 12).

Figure 12 POS tab



[Table 7](#) describes the fields in the POS tab.

Table 7 POS tab fields

Field	Description
Action: reset	Resets the card.
ImageFileName	Name of the image file which downloads at initialization.

- 4 Click reset.
- 5 Click Apply.

To reset the card using the CLI, see [“Configuration commands” on page 92](#).

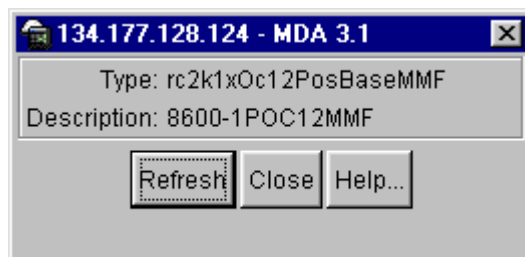
Viewing MDA information

To view information on the MDA you are using:

- 1 Highlight the MDA.
- 2 Select Edit > Mda.

The MDA dialog box opens ([Figure 13](#)).

Figure 13 MDA dialog box



[Table 8](#) describes the fields in the MDA dialog box.

Table 8 MDA dialog box fields

Field	Description
Type	Media type: <ul style="list-style-type: none"> • OC-3c SMF MDA • OC-3c MMF MDA • OC-12c SMF MDA • OC-12c MMF MDA
Description	MDA description: <ul style="list-style-type: none"> • OC-3c SMF MDA—Dual port OC-3c SMF • OC-3c MMF MDA—Dual port OC-3c MMF • OC-12c SMF MDA — Single Port OC-12c SMF • OC-12c MMF MDA —Single Port OC-12c MMF

Command line interface

Using the command line interface (CLI), you can perform most module management tasks. For detailed information on all aspects of the CLI, refer to:

- *Getting Started with the Passport 8000 Series Management Software*
- *Reference for Passport 8000 Series Command Line Interface Switching Operations*, and
- *Reference for the Passport 8000 Series Command Line Interface Routing Operations*.

The CLI identifies an interface by its slot number in the Passport 8600 chassis and its port number, using the syntax slot number/port number (s/p). Refer to [“Port numbering” on page 45](#) for information on the slot and port numbering for the Passport 8683POS Module.

Configuration procedures

You can configure the Passport 8683POS Module in two basic modes:

- **Bridging:** Bridging mode is enabled by default. Bridging is configured for connections between two Passport 8683POS Modules and between Passport 8683POS Modules and other devices that support PPP bridging.
- **Routing:** You select routing mode for connections between your Passport 8683POS Module and other POS-capable routers for IP and IPX routing.

Use Device Manager and/or CLI to perform these configuration and related tasks on the Passport 8683POS Module. For information on advanced configurations, refer to *Getting Started with Passport 8000 Series Management Software*.

This section describes the following:

- [“Default configurations,”](#) next
- [“Basic procedures”](#) on page 55
- [“Configuring bridging”](#) on page 62

Default configurations

The Passport 8683POS Module has the following default configurations.

[Table 9](#) describes the default settings.

Table 9 Passport 8683POS Module default settings

Parameter	Default
Bridge Admin State (BCP)	Open
IP Admin State (IPCP)	Close
IPX Admin State (IPXCP)	Close
Clock source	Line
FCS size	32
Debug	Disabled
Framing	SONET
Priority	Low

Table 9 Passport 8683POS Module default settings (continued)

Parameter	Default
Lock	False
Lqr interval	100
Lqr status	Enabled
Lqr threshold	95
Magic number	True
Oversize frame	Disabled
Perform tagging	Disabled
Scramble	Enabled
Signal-Label (C2)	0x16
Section trace (J0)	1 (0x01)
STP RFC 1638	Enabled
Tagged frame discard	Disabled
Unknown MAC discard	Disabled
Untagged frame discard	Disabled
Device Manager interval	10 seconds

Basic procedures

To change the default settings on the Passport 8683POS Module or to perform any configuration tasks in Device Manager, select the port you want to configure and open the Interface tab.

To open the Interface tab:

Do one of the following:

- Right-click on the port. A shortcut menu opens. Choose Edit.
- Double-click on the port.

The Port dialog box opens with the Interface tab displayed ([Figure 14](#)). This tab displays information about the port and allows you to configure various elements.

Figure 14 Port dialog box — Interface tab

10.125.200.45 - Port 2/3

Interface | POS SONET | POS PPP | VLAN | STG | Test | IP Address | ARP | DHCP | DVMRP | IGMP | OSPF | RIP

Index: 130
 Name: POS MDA 2
 Descr: OC-12c(MM) Port 2/3
 Type: rcOc12cPosMM
 Mtu: 1936
 PhysAddress: 00:80:2d:b2:ec:48
 VendorDescr:

AdminStatus: ☒ up ☐ down ☐ testing
 OperStatus: down
 LastChange: none
 LinkTrap: ☒ enabled ☐ disabled

AutoNegotiate: ☐ true ☒ false
 AdminDuplex: ☐ half ☒ full
 OperDuplex: full
 AdminSpeed: ☐ mbps10 ☐ mbps100
 OperSpeed: 0

QosLevel: ☐ level0 ☒ level1 ☐ level2 ☐ level3 ☐ level4 ☐ level5 ☐ level6 ☐ level7
☐ DiffServEnable
 DiffServType: ☐ none ☐ access ☒ core

MtId: 0
 Locked: false
☐ UnknownMacDiscard
☒ DirectBroadcastEnable

Action: ☒ none ☐ flushMacFdb ☐ flushArp ☐ flushIp ☐ flushAll ☐ triggerRipUpdate
 Result: none

Apply Refresh Close Help...

Table 10 describes the Interface tab items.

Table 10 Interface tab items

Item	Description
Index	Unique value assigned to each interface. The value ranges between 16 and 255.
Name	Displays the name of this port. To assign or change a name to the port, highlight the field and enter alphanumeric characters.
Descr	Type of interface, either: <ul style="list-style-type: none"> OC-3c MMF or SMF OC-12c MMF or SMF
Type	Media type of this interface. This will be ppp for a port on the Passport 8683POS Module.
Mru	Size (in octets) of the largest packet that can be sent or received on the interface. For IPCP and IPXCP, the maximum is 1936. When BCP is enabled, however, the maximum is 1934. Check which NCP is enabled before configuring the Mru on a connecting device. Note: The Bridge Control Protocol (BCP) is enabled on the Passport 8683POS Module by default.
PhysAddress	MAC address assigned to a particular interface.
VendorDescr	Vendor description.
AdminStatus	Sets the port to one of the following states: <ul style="list-style-type: none"> up down testing When a managed system initializes, all interfaces start with AdminStatus in the down state. As a result of either management or configuration action, the AdminStatus is changed to the up state (or remains in the down state). The testing state indicates that no operational packets can be passed.
OperStatus	Operational state of the interface, one of the following: <ul style="list-style-type: none"> up down testing The testing state indicates that no operational packets can be passed. If AdminStatus is down, then OperStatus should be down. If AdminStatus is changed to up, then OperStatus should change to up if the interface is ready to transmit and receive network traffic. It should remain in the down state if and only if there is a fault that prevents it from going to the up state.

Table 10 Interface tab items (continued)

Item	Description
LastChange	Value of sysUpTime at the time the interface entered its current operational state. If the current state was entered prior to the last reinitialization of the local network management subsystem, the value is zero.
LinkTrap	Sets whether or not link Up/link Down traps should be generated for this interface. <ul style="list-style-type: none">• enabled—sends traps for link up or down• disabled—does not send traps for link up or down
OperDuplex	Current operational duplex of the port (half or full). This will always be full duplex on a POS port.
OperSpeed	Current operating speed of the port. It can be either 155 or 622 Mb/s depending on the type of interface installed.
MltId	Multi-Link Trunk to which the port is assigned (if any).
Locked	Displays whether or not the port is locked. When locked, the port configuration cannot be changed. To lock or unlock a port, select Edit > Security > Port Lock.
Action	Sets one of the following port-related actions: <ul style="list-style-type: none">• none• flushMacFdb—flush MAC forwarding table for port• flushArp—flush ARP table for port• flushIp—flush IP route table for port• flushAll—flush all tables for port• triggerRipUpdate—manually update the RIP table
Result	Displays results from the last system action.

From the Interface tab, select other POS-specific tabs to configure the port or change current or default configurations.

Enabling or disabling a port



Note: When you change configurations in Device Manager, and hit the Apply button, the system will disable and re-enable the port automatically.

You can enable or disable a port by two methods. To enable or disable a port through the Device Manager menu bar:

- 1 Highlight the port.
- 2 From the Device Manager menu bar, choose Edit > Port.
The Port dialog box opens with the Interface tab displayed ([Figure 14 on page 56](#)).
- 3 In AdminStatus area, click up to enable the port, or click down to disable the port.
- 4 Click Apply.

To enable or disable a port using a shortcut menu:

- 1 Right-click on the port.
A shortcut menu opens.
- 2 Choose Enable or Disable.

SONET parameters

To change the default parameters, you configure the values for the Synchronous Optical Network (SONET) media in the POS SONET tab. These values must be configured before you configure POS PPP, VLAN, or any other parameters.

See [Table 9 on page 54](#) for the default SONET parameters.

To change the configuration of the SONET parameters:

- 1 Highlight the port.

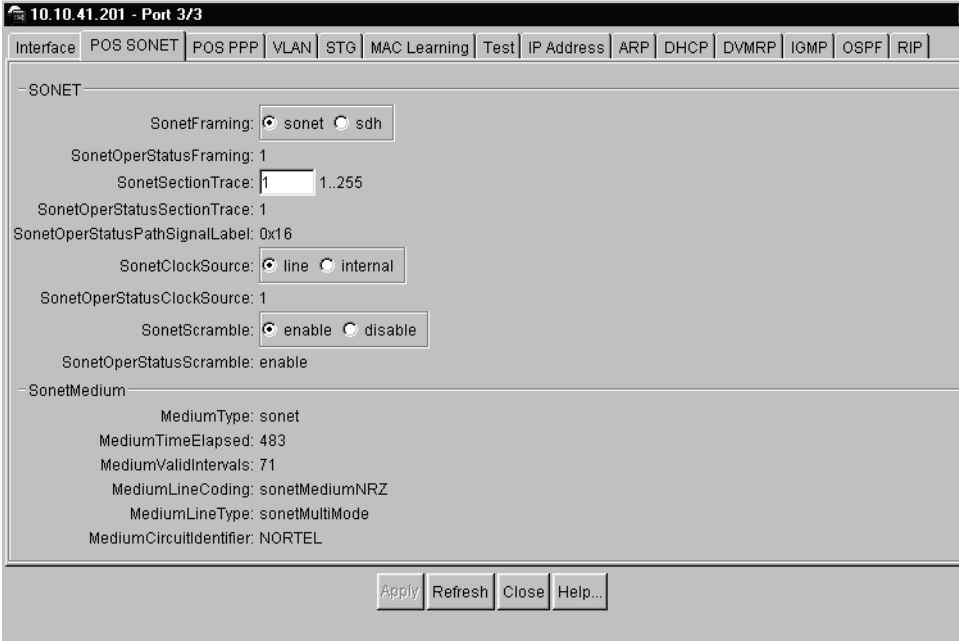
2 Choose Edit > Port.

The Port dialog box opens with the Interface tab displayed ([Figure 14 on page 56](#)).

3 Disable the port as described in “[Enabling or disabling a port](#)” on page 59.**4** In the Interface tab, click the POS SONET tab.

The POS SONET tab opens ([Figure 15](#)).

Figure 15 Port dialog box — POS SONET tab



10.10.41.201 - Port 3/3

Interface | POS SONET | POS PPP | VLAN | STG | MAC Learning | Test | IP Address | ARP | DHCP | DVMRP | IGMP | OSPF | RIP

SONET

SonetFraming: ☒ sonet ☐ sdh

SonetOperStatusFraming: 1

SonetSectionTrace: 1 1..255

SonetOperStatusSectionTrace: 1

SonetOperStatusPathSignalLabel: 0x16

SonetClockSource: ☒ line ☐ internal

SonetOperStatusClockSource: 1

SonetScramble: ☒ enable ☐ disable

SonetOperStatusScramble: enable

SonetMedium

MediumType: sonet

MediumTimeElapsed: 483

MediumValidIntervals: 71

MediumLineCoding: sonetMediumNRZ

MediumLineType: sonetMultiMode

MediumCircuitIdentifier: NORTEL

Apply Refresh Close Help...

Table 11 describes the items in the POS SONET tab.

Table 11 POS SONET tab items

Item	Description
SonetFraming	Sets the framing for the port to: <ul style="list-style-type: none"> SONET—Synchronous Optical Network format; standard format used in North America (default) SDH—Synchronous Digital Hierarchy clock format; standard format used in Europe.
SonetOperStatusFraming	Operational value of SONET framing.
SonetSectionTrace	Sets the integer that the section trace flag (j0) is set to, that is an integer between 1 and 255.
SonetOperStatusSectionTrace	Operational value of SonetSectionTrace.
SonetOperStatusPathSignalLabel	Operational value of Path Signal Label.
SonetClockSource	Sets the Clock Source to either line or internal.
SonetOperStatusClockSource	Operational value of ClockSource.
SonetScramble	Parameter that enables or disables the scrambling option.
SonetOperStatusScramble	Operational value of SonetScramble.
SonetMedium	
MediumType	Identifies whether a SONET or a SDH signal is used across this interface.
MediumTimeElapsed	Number of seconds, including partial seconds, that have elapsed since the beginning of the current measurement period. If, for some reason, such as an adjustment in the system's time-of-day clock, the current interval exceeds the maximum value, the agent will return the maximum value.
MediumValidIntervals	Number of previous 15-minute intervals for which data was collected.
MediumLineCoding	Line coding for this interface. The Non-Return to Zero (NRZ) line coding is used for optical SONET/SDH signals.
MediumLineType	Line type for this interface. The line types are single mode fiber or multimode fiber interfaces.
MediumCircuitIdentifier	Transmission vendor's circuit identifier, for the purpose of facilitating troubleshooting. Note that the circuit identifier, if available, is also represented by ifPhysAddress.

- 5 Select the SonetClockSource, either line or internal.

If two Passport POS Modules are operating directly (that is, connected back to back, without any intervening Sonet equipment), one port must provide the clock source. Set the clock source of one port to internal, and the opposite port must be set to line.

- 6 Select other SONET parameters.
- 7 Click Apply.
- 8 Re-enable the port as described in [“Enabling or disabling a port” on page 59](#).

Configuring bridging

The Passport 8683POS Module is configured for bridging by default. The configuration is set for bridging between two Passport 8683POS Modules with one default VLAN. The Bridge Control Protocol (BCP) is enabled on the Passport 8683POS Module by default.



Note: When the POS link is enabled after a parameter change or a chassis reset, some superfluous traffic may initially be sent out of POS ports before any LCP packets go out. This is normal.

You can also configure bridging for the Passport 8683POS Module for connection to other POS-capable devices.

Configuring routing

A POS port configured for IPCP and/or IPXCP encapsulation must be the sole member of the VLAN. You cannot add any other port to a VLAN which already has a POS port with IPCP and/or IPXCP encapsulation enabled. You cannot add a POS port which is configured for IPCP and/or IPXCP encapsulation to a VLAN which already has other ports as members.



Note: When the Passport 8600 switch is interoperating with a Juniper router, the POS port must have the Juniper IP address configured in the remote IP field. This is necessary because the Juniper routers do not provide their local IP address during PPP negotiation. The Passport 8600 switch requires the Juniper address for IPCP operations. See [“config pos ip” on page 94](#) for information on configuring the remote IP address. Note also that 30-bit subnet masks may be required for certain JUNOS releases.

Configuring IP routing using Device Manager

To configure the Passport 8683POS Module for IP routing using Device Manager:

- 1 Highlight the port.
- 2 Choose Edit > port.

The Port dialog box opens with the Interface tab displayed ([Figure 14 on page 56](#)).

- 3 Click the POS PPP tab.

The POS PPP tab opens ([Figure 16](#)).

Figure 16 Port dialog box — POS PPP tab

10.125.200.45 - Port 2/3

Interface | POS SONET | POS PPP | VLAN | STG | Test | IP Address | ARP | DHCP | DVMRP | IGMP | OSPF | RIP

Link

LinkConfigMagicNumber: ☐ false ☒ true

OperStatusLinkMagicNumber: 2

LinkConfigFcsSize: 0..128 (only 16/32 supported)

LinkStatusTransmitFcsSize: 32

Bridge

BridgeConfigAdminStatus: ☒ open ☐ close

BridgeOperStatus: not-opened

LineConfigPppStp: ☒ enable ☐ disable

OperStatusLinePppStp: enable

Ip

IpConfigAdminStatus: ☐ open ☒ close

IpOperStatus: not-opened

LineConfigRemotIpAddr:

LineStatusRemotIpAddr: 0.0.0.0

Ipx

IpxcpAdminStatus: ☐ open ☒ close

IpxOperStatus: down

RoutingProtocol: ☐ none ☒ rip

LineStatusIpxRoutingProtocol: 0

Lqr

LqrConfigStatus: ☒ disabled ☐ enabled

OperStatusLqrStatus: 1

LqrConfigPeriod: 0..2147483647

LineStatusLocalPeriod: 0

LineConfigLqrThreshold: 1..100

OperStatusLineLqrThreshold: 95

Apply Refresh Close Help...

Table 12 describes the POS PPP tab items

Table 12 POS PPP tab items

Area	Item	Description
Link	LinkConfigMagicNumber	If set to enable, selects a random number ("magic number") used in loopback detection. Enable detects loopback; disable does not detect loopback.
	OperStatusLinkMagicNumber	Operational value of LinkConfigMagicNumber.
	LinkConfigFcsSize	Configures the size (in bits) of cyclic redundancy check field used in PPP frame.
	LinkStatusTransmitFcsSize	Operational value of LinkConfigFcsSize.
Bridge	BridgeAdminConfigStatus	This parameter enables or disables bridged traffic with in PPP.
	BridgeOperStatus	Operational value of BridgeAdminConfigStatus.
	LineConfigPppStp	Enables BPDUs to be received or transmitted with BPDU specific encapsulation. When disabled encapsulated within Ethernet frames.
IP	OperStatusLinePppStp	Enables or disables PPP.
	IpConfigAdminStatus	Enables or disables the IP traffic (link) with in PPP.
	IpOperStatus	Operational value of IP link.
	LineConfigRemoteIPAddr	Configured value of remote end IP address.
	LineStatusRemoteIPAddr	Negotiated value of the remote end IP address.
IPX	IpxcpAdminStatus	Enables or disables the IPX traffic (link) with in PPP.
	IpxOperStatus	Operational value of IPX link.
	RoutingProtocol	Sets the IPX Routing Protocol to none or RIP.
	LineStatusIpxRoutingProtocol	Negotiated value of RoutingProtocol.
LQR	LqrConfigStatus	Sets the link quality reporting to enabled or disabled.
	OperStatusLqrStatus	Negotiated value of LqrConfigStatus.
	LqrConfigPeriod	Sets the link quality-reporting interval in 100th of a second.
	LineStatusLocalPeriod	Negotiated value of LqrConfigPeriod.
	LineConfigLqrThreshold	Sets input quality threshold in percent.
	OperStatusLqrThreshold	Operational value of LineConfigLqrThreshold.

4 In the BridgeConfigAdminStatus section, click close to disable bridging.

5 To enable IP routing, in the IpConfigAdminStatus field, click open.

6 To configure an IP address for the port:

a Highlight the port.

b Choose Edit > Port.

The Port dialog box opens with the Interface tab displayed (Figure 14 on page 56).

c Click the IP Address tab.

The IP address tab opens (Figure 17).

Figure 17 Port dialog box — IP Address tab

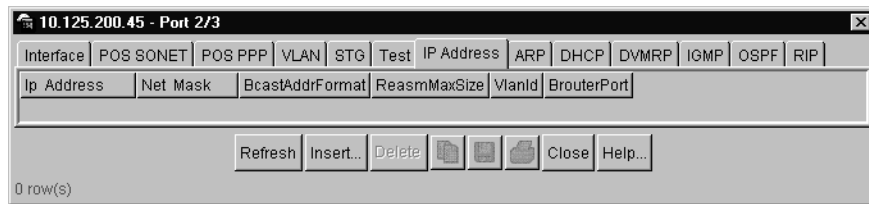


Table 13 describes the fields in the IP Address tab.

Table 13 IP Address tab fields

Field	Description
IpAddress	IP address to which the entry's addressing information pertains.
NetMask	The subnet mask associated with the IP address of the entry.
BcastAddrFormat	The IP broadcast address format used on this interface.
ReasmMaxSize	The size of the largest IP datagram which this entity can re-assemble from incoming IP fragmented datagrams received on this interface.
VlanId	Unique VLAN identifier.
BrouterPort	indicates whether this entry corresponds to a brouter port (as oppose to a routable VLAN). This value cannot be changed after the row is created.

d Click Insert.

The Port, Insert IP Address dialog box opens (Figure 18).

Figure 18 Port, Insert IP Address dialog box

[Table 14](#) describes the Port, Insert IP Address dialog box items.

Table 14 Insert IP Address dialog box items

Item	Description
Ip Address	IP address to which the entry's addressing information pertains.
Net Mask	The subnet mask associated with the IP address of the entry.
VlanId	Unique VLAN identifier.

- e Type the IP address and click Insert.

The IP address displays in the table in the IP Address tab ([Figure 17](#)).

- 7 Click Apply.
- 8 To enable the port on both Passport 8683POS Modules, click the Interface tab and, in the AdminStatus field, click up.
- 9 Click Apply.

Configuring IP routing using the CLI

To configure the Passport 8683POS Modules for IP routing using the CLI:

- 1 To disable the selected port on both Passport 8683POS Modules, enter:

```
config pos <ports> state disable
```
- 2 To disable bridging, enter:

```
config pos <ports> bridge-admin-status close
```

- 3 To configure IP routing, enter:

```
config pos <ports>> ppp ip-admin-status open
```

- 4 To configure an IP address on the selected port on both Passport 8683POS Modules, enter:

```
config pos <ports> ip create <ipaddr/mask> <vid>
```

- 5 To enable the selected port on both Passport 8683POS Modules, enter:

```
config pos <ports> state enable
```

See [Chapter 6, “Command line interface,” on page 91](#) for descriptions of the CLI commands.

Configuring IPX routing using Device Manager

When you use IPXCP encapsulation, you must select Ethernet II as the MAC encapsulation for the protocol-based VLANs. IPXCP supports only the Ethernet II format.

To configure the Passport 8683POS Modules for IPX routing using Device Manager:

- 1 Configure an Ethernet II protocol-based VLAN.
- 1 Highlight the port.
- 2 Choose Edit > port.

The Port dialog box opens with the Interface tab displayed ([Figure 14 on page 56](#)).

Refer to *Reference for Passport 8000 Series Management Software Routing Operations* for information on how to configure VLANs using Device Manager.

- 3 Disable the port as described in [“Enabling or disabling a port” on page 59](#).
- 4 To configure the VLAN as an IPX protocol-based VLAN and assign the port to the VLAN:
 - a From the Device Manager menu bar, choose VLAN > VLAN.

The VLAN dialog box opens with the Basic tab displayed (Figure 19).

Figure 19 VLAN dialog box — Basic tab

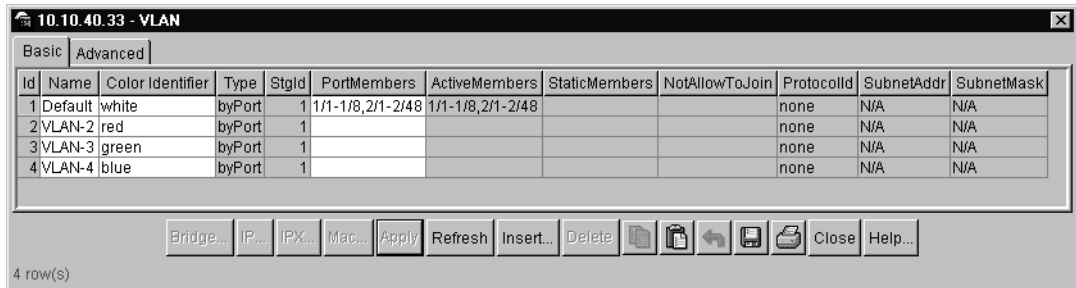


Table 15 describes the fields in the Basic tab.

Table 15 Basic tab fields

Field	Description
Id	Unique VLAN identifier.
Name	An administratively-assigned name for this VLAN.
ColorIdentifier	An administratively-assigned color code for this VLAN. The value of this object is used by the VLAN Manager GUI tool to select a color when it draws this VLAN on the screen.
Type	Type of VLAN, distinguished according to the policy used to define its port membership.
StgId	Spanning Tree Group (STG) used by the VLAN to determine the state of its ports. If the VLAN is not associated with any STG, this value should be set to zero.
PortMembers	Set of ports that are members (static or dynamic) of this VLAN.
ActiveMembers	Set of ports that are currently active in this VLAN. Active ports include all static ports and any dynamic ports where the VLAN policy was met.
StaticMembers	Set of ports that are static members of this VLAN. A static member of a VLAN is always active and is never aged out.
NotAllowtoJoin	Set of ports that are not allowed to become members of this VLAN.
ProtocolId	Protocol identifier of this VLAN. This value is meaningful only if rcVlanType is equal to byProtocolId(3). For other VLAN types it should have the value none(0).

Table 15 Basic tab fields (continued)

Field	Description
SubnetAddr	IP subnet address of this VLAN. This value is meaningful only if rcVlanType is equal to byIpSubnet(2). For other VLAN types it should have the value 0.0.0.0.
SubnetMask	IP subnet mask of this VLAN. This value is meaningful only if rcVlanType is equal to byIpSubnet(2). For other VLAN types it should have the value 0.0.0.0.

- b** To assign the POS ports to the VLAN as static members, enter the ports in the StaticMembers column.
 - c** To assign all other ports to the VLAN as active members, enter the ports in the ActiveMembers column.
 - d** Enter the POS ports in the NotAllowToJoin column.
 - e** Click Apply.
- 5** To disable bridging:
 - a** Click the POS PPP tab.
 - b** In the Bridge area, BridgeConfigAdminStatus field, click Close.
- 6** To enable IPX routing on each selected port:
 - a** Click the POS PPP tab.
 - b** In the IPX area, IpxcpAdminStatus field, click Open.
- 7** To enable the port on both Passport 8683POS Modules:
 - a** Click the Interface tab.
 - b** In the AdminStatus field, click Up.
- 8** Click Apply.

Configuring IPX routing using the CLI

To configure the Passport 8683POS Modules for IPX routing using the CLI:

- 1 Configure a protocol-based VLAN, and assign the port to the VLAN as a static member and ensure that no other ports are allowed to join.

Refer to *Reference for Passport 8000 Management Software Routing Operations* for information on how to configure VLANs using CLI.

- 2 To disable the selected port on both Passport 8683POS Modules, enter:

```
config pos <ports> state disable
```

- 3 To disable bridging, enter:

```
config pos <ports> bridge-admin-status close.
```

- 4 To configure IPX routing, enter:

```
config pos <ports> ppp ipx-admin-status open.
```

- 5 To enable the selected port on both Passport 8683POS Modules, enter:

```
config pos <ports> state enable
```

See [Chapter 6, “Command line interface,” on page 91](#) for descriptions of the CLI commands.

Trap feature

The Passport 8600 chassis with a functioning Passport 8683POS Module automatically receives SONET-specific traps.

To configure the device for SONET-specific traps:

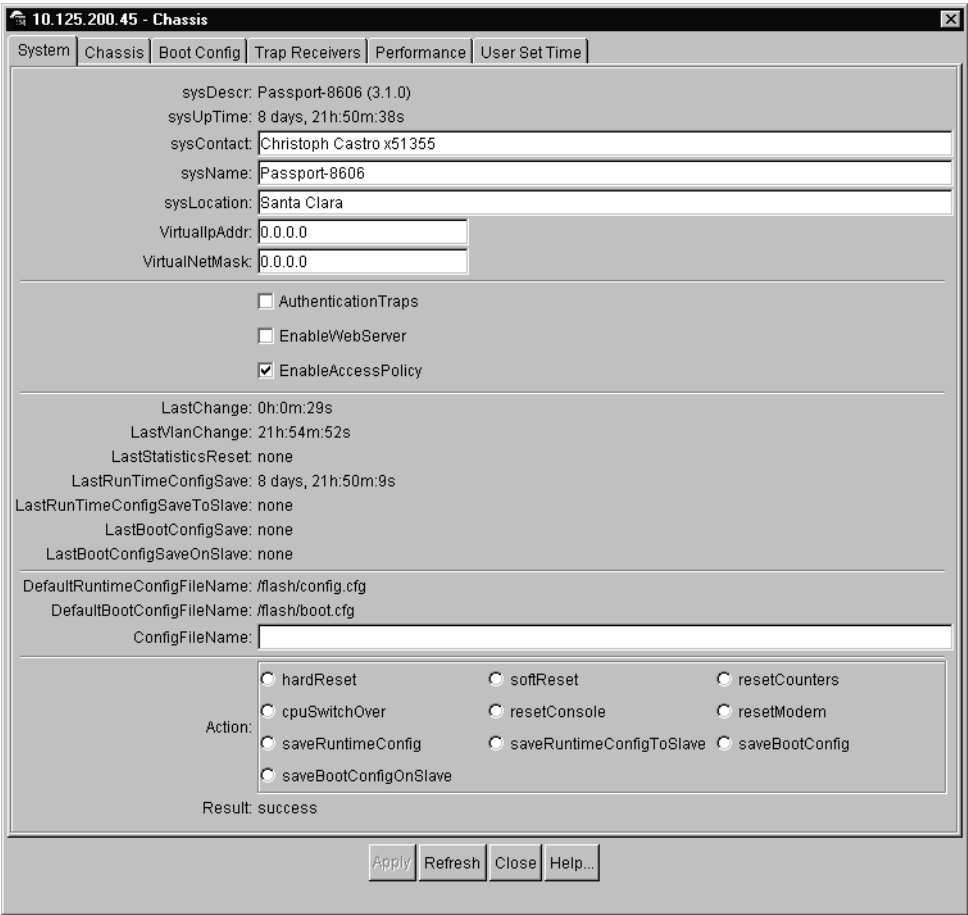
- 1 In Device Manager, select the chassis.

The frame of the chassis is highlighted.

- 2 Choose Edit > Chassis.

The Chassis dialog box opens with the System tab displayed ([Figure 20](#)).

Figure 20 Chassis dialog box — System tab



10.125.200.45 - Chassis

System | Chassis | Boot Config | Trap Receivers | Performance | User Set Time

sysDescr: Passport-8606 (3.1.0)
 sysUpTime: 8 days, 21h:50m:38s
 sysContact: Christoph Castro x51355
 sysName: Passport-8606
 sysLocation: Santa Clara
 VirtualIpAddr: 0.0.0.0
 VirtualNetMask: 0.0.0.0

☐ AuthenticationTraps
☐ EnableWebServer
☒ EnableAccessPolicy

LastChange: 0h:0m:29s
 LastVlanChange: 21h:54m:52s
 LastStatisticsReset: none
 LastRunTimeConfigSave: 8 days, 21h:50m:9s
 LastRunTimeConfigSaveToSlave: none
 LastBootConfigSave: none
 LastBootConfigSaveOnSlave: none

DefaultRuntimeConfigFileName: /flash/config.cfg
 DefaultBootConfigFileName: /flash/boot.cfg
 ConfigFileName:

Action:
☐ hardReset ☐ softReset ☐ resetCounters
☐ cpuSwitchOver ☐ resetConsole ☐ resetModem
☐ saveRuntimeConfig ☐ saveRuntimeConfigToSlave ☐ saveBootConfig
☐ saveBootConfigOnSlave

Result: success

Apply Refresh Close Help...

3 Click the Trap Receivers tab.

The Trap Receivers tab opens (Figure 21).

Figure 21 Chassis dialog box — Trap Receivers tab



10.10.41.201 - Chassis

System | Chassis | Boot Config | Trap Receivers | Performance | UserSetTime

IpAddress	Community	Version
134.177.25.205	public	v1

Apply Refresh Insert... Delete    Close Help...

1 row(s)

Table 16 describes the fields in the Trap Receivers tab.

Table 16 Trap Receivers tab fields

Field	Description
IpAddress	IP address to which the entry's addressing information pertains.
Community	Community string used for trap messages to this trap receiver.
Version	Version

4 Click Insert.

The Chassis, Insert Trap Receivers dialog box opens (Figure 22).

Figure 22 Chassis, Insert Trap Receiver dialog box

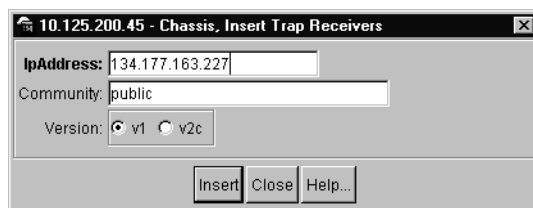


Table 17 describes the fields in the Insert Trap Receiver dialog box.

Table 17 Insert Trap Receiver dialog box fields

Field	Description
IpAddress	IP address to which the entry's addressing information pertains.
Community	Community string used for trap messages to this trap receiver
Version	Version

5 Enter the IP address of the device you are monitoring and click Insert.

The dialog box closes and the Trap Receivers tab is redisplayed.

6 Click Apply.

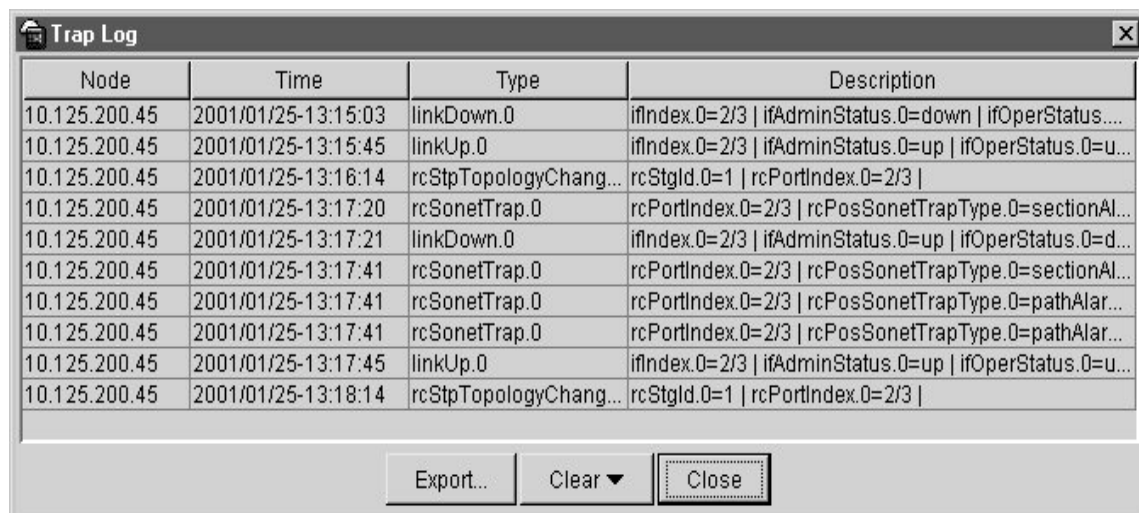
Viewing the Trap Log

To view the Trap Log that contains SONET-specific traps:

Click the bell icon on the toolbar.

The Trap dialog box opens (Figure 23).

Figure 23 Trap Log dialog box



Node	Time	Type	Description
10.125.200.45	2001/01/25-13:15:03	linkDown.0	ifIndex.0=2/3 ifAdminStatus.0=down ifOperStatus....
10.125.200.45	2001/01/25-13:15:45	linkUp.0	ifIndex.0=2/3 ifAdminStatus.0=up ifOperStatus.0=u...
10.125.200.45	2001/01/25-13:16:14	rcStpTopologyChang...	rcStgId.0=1 rcPortIndex.0=2/3
10.125.200.45	2001/01/25-13:17:20	rcSonetTrap.0	rcPortIndex.0=2/3 rcPosSonetTrapType.0=sectionAl...
10.125.200.45	2001/01/25-13:17:21	linkDown.0	ifIndex.0=2/3 ifAdminStatus.0=up ifOperStatus.0=d...
10.125.200.45	2001/01/25-13:17:41	rcSonetTrap.0	rcPortIndex.0=2/3 rcPosSonetTrapType.0=sectionAl...
10.125.200.45	2001/01/25-13:17:41	rcSonetTrap.0	rcPortIndex.0=2/3 rcPosSonetTrapType.0=pathAlar...
10.125.200.45	2001/01/25-13:17:41	rcSonetTrap.0	rcPortIndex.0=2/3 rcPosSonetTrapType.0=pathAlar...
10.125.200.45	2001/01/25-13:17:45	linkUp.0	ifIndex.0=2/3 ifAdminStatus.0=up ifOperStatus.0=u...
10.125.200.45	2001/01/25-13:18:14	rcStpTopologyChang...	rcStgId.0=1 rcPortIndex.0=2/3

Export... Clear ▼ Close

Table 18 describes the fields in the Trap Log dialog box.

Table 18 Trap Log dialog box fields

Field	Description
Node	IP address of the device sending SONET trap.
Time	Timestamp in the trap.
Type	Type of SONET trap: Section/Line/Path alarm.
Description	Description of the alarm: LOS, LOF, and so forth.

SONET loopback test feature

This section describes the loopback test features in Device Manager available for the Passport 8683POS Module. For information on the CLI test commands, see [“Test commands” on page 127](#).

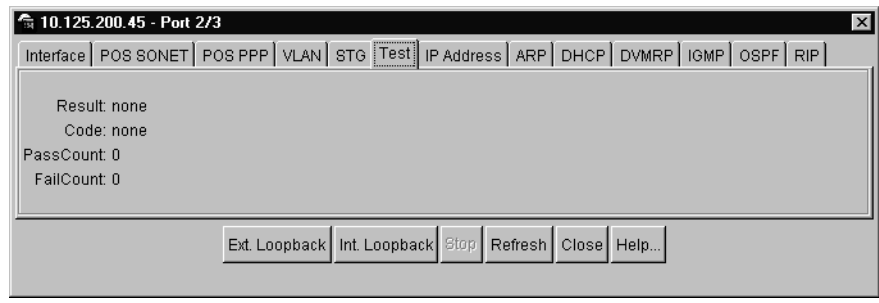


Note: All ports must be in test mode to conduct any testing.

To test for loopback:

- 1 Highlight the port.
- 2 Choose Edit > port.
The Port dialog box opens with the Interface tab displayed ([Figure 14 on page 56](#)).
- 3 In the AdminStatus field, click testing.
- 4 Click Apply.
- 5 Click the Test tab.
The Test tab opens ([Figure 24](#)).

Figure 24 Port dialog box — Test tab



[Table 19](#) describes the Test tab items.

Table 19 Test tab items

Item	Description
Result	Result of the test.
Code	Code used for test.
PassCount	Number of events which passed the test.
FailCount	Number of events which failed the test.

- 6** Click Ext. Loopback to test the external loopback or click Int. Loopback to test the internal loopback.

A dialog box displays the test results.

- 7** Click Stop to cease testing.

- 8** Click Close.

- 9** Click the Interface tab.

- 10** In the AdminStatus field, click up.

- 11** Click Apply.



Note: To run the external loopback test, you need a loopback cable on that port.

The test statistics are available only when the test has finished, unlike Ethernet ports where the test statistics can be viewed during testing.

Alarms

Using Device Manager or the CLI, you can enable RMON globally or on a port-by-port basis. Implementing RMON lets you set alarms relating to specific events or variables.

Refer to *Reference for the Passport 8000 Series Management Software Switching Operations* for more information on alarms.

[Table 20](#) lists the alarms that are specific to the Passport 8683POS Module. The alarms are listed in order of priority.

Table 20 Passport 8683POS Module alarms

Name	Description
Section alarms	
LOS	Loss of signal - not enough Rx power or fiber disconnected.
LOF	Loss of frame - unable to frame the signal correctly, possibly due to improper timing setup.
Line Alarms	
L-AIS	Alarm Indication Signal - sent out when a port is disabled or indicates another line failure.
L-RDI	Remote Defect Indication - the result of a L-AIS or LOS/LOF at the remote end.
Path Alarms	
P-AIS	Path Alarm Indication Signal - indicates a propagation upstream of a downstream L-AIS alarm or another path failure.
P-LOP	Path Loss of Pointer - the pointer to the Sonet SPE is not correct; sometimes due to dirty fiber, or timing slips.
P-RDI	Path Remote Indicator - the result of a P-AIS alarm at the remote end.
P-SLM	Path Signal Label Mismatch - path labels do not match, in particular the C2 label is mismatched. (The C2 label is used to indicate scrambling according to RFC 2615.)
P-UNEQ	Path is unequipped - the path is may not be provisioned to handle traffic cross-connects.

Chapter 5

Graphing statistics in Device Manager

This chapter contains information on the following topics:

- [“Overview,”](#) next
- [“Displaying statistics”](#) on page 80

For more information about using Passport Device Manager, refer to *Reference for Passport 8000 Series Management Software Switching Operations, Release 3.1* and *Reference for Passport 8000 Series Management Software Routing Operations, Release 3.1*

Overview

Device Manager allows you to graph and display certain statistics for the Passport 8683POS Module.

Refer to *Reference for the Passport 8000 Series Management Software Switching Operations, Release 3.1* for complete details on graphing statistics.

The values for the POS, PPP Link, and PPP LQR tabs are displayed for absolute, cumulative, average, minimum, maximum, and last values.

[Table 21](#) describes these values.

Table 21 Types of statistics

Field	Description
AbsoluteValue	The total count since the last reset of counters. A system reboot resets all counters.
Cumulative	The total count since the statistics tab was first opened. The elapsed time for the cumulative counter is displayed at the bottom of the statistics window.
Average	The cumulative count divided by the cumulative elapsed time.
Minimum	The minimum average for the counter for a given polling interval over the cumulative elapsed time.
Maximum	The maximum average for the counter for a given polling interval over the cumulative elapsed time.
LastValue	The average for the counter over the last polling period.

The values for the POS, PPP Link, and PPP LQR tabs are updated based on the poll interval. For information on how to set the poll interval, refer to *Reference for the Passport 8000 Series Management Software Switching Operations, Release 3.1*.

Displaying statistics

The Passport 8683POS Module provides the following statistics tabs:

- [“Viewing POS statistics,”](#) next
- [“Viewing PPP Link statistics”](#) on page 83
- [“Viewing PPP LQR”](#) on page 84
- [“Viewing Section statistics”](#) on page 86
- [“Viewing Line statistics”](#) on page 87
- [“Viewing FE Line statistics”](#) on page 88
- [“Viewing Path statistics”](#) on page 90
- [“Viewing FE Path statistics”](#) on page 91



Note: The windows displaying statistics are read-only.

Viewing POS statistics

To display statistics POS statistics:

- 1 On the device view, right-click the port.
- 2 Choose Graph POS.

The graphSonetPort dialog box opens with the POS tab displayed (Figure 25).

Figure 25 graphSonetPort dialog box — POS tab

10.125.200.45 - graphSonetPort 2/3

POS	PPP Link	PPP LQR	Section	Line	FE Line	Path	FE Path	
			AbsoluteValue	Cumulative	Average/sec	Minimum/sec	Maximum/sec	LastVal/sec
InErrors			225	0	0	0	0	0
InUnknownProtos			0	0	0	0	0	0
OutErrors			0	0	0	0	0	0
HCInOctets			303,570	0	0	0	0	0
HCInUcastPkts			4,348	0	0	0	0	0
HCInDiscards			0	0	0	0	0	0
HCOctets			810,967	0	0	0	0	0
HCOUcastPkts			15,149	0	0	0	0	0
HCOUdiscards			0	0	0	0	0	0







CloseHelp...Poll Interval: 10s0h:1m:30s

Table 22 describes the fields in the POS tab.

Table 22 POS tab fields

Field	Description
InErrors	Number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.
InUnknownProtos	Number of packets received via the interface which were discarded because of an unknown or unsupported protocol.
OutErrors	Number of outbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.

Table 22 POS tab fields (continued)

Field	Description
HCInOctets	The total number of octets received on the interface, including framing characters.
HCInUcastPkts	Number of packets delivered by this sub-layer to a higher (sub-)layer, which were not addressed to a multicast or broadcast address at this sub-layer.
HCInMulticastPkts	Number of packets delivered by this sub-layer to a higher (sub-)layer, which were addressed to a multicast address at this sub-layer.
HCInBroadcastPkts	Number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a broadcast address at this sub-layer.
HCInDiscards	Number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.
HCOctets	The total number of octets transmitted out of the interface, including framing characters.
HCOUcastPkts	Number of packets that higher-level protocols requested be transmitted, and which were not addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent.
HCOMulticastPkts	Number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast address at this sub-layer, including those that were discarded or not sent.
HCOutBroadcastPkts	Number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sub-layer, including those that were discarded or not sent.
HCOutDiscards	Number of outbound packets which were chosen to be discarded.

Viewing PPP Link statistics

To display PPP Link statistics:

- 1 On the device view, right-click the port.
- 2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 25).

3 Click the PPP Link tab.

The PPP Link tab opens (Figure 26).

Figure 26 graphSonetPort dialog box — PPP Link tab

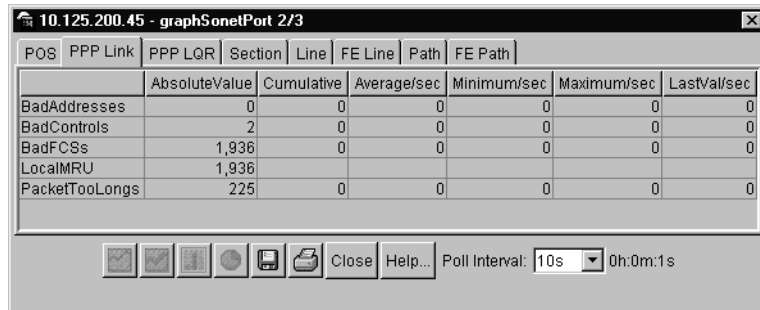


Table 23 describes the fields in the PPP Link tab.

Table 23 PPP Link tab fields

Field	Description
BadAddresses	Number of packets received with an Incorrect Address Field. This counter is a Component of the ifInErrors variable that is associated with the interface that represents this PPP Link.
BadControls	Number of packets received on this link with an incorrect Control Field. This counter is a component of the ifInErrors variable that is associated with the interface that represents this PPP Link.
BadFCSSs	
LocalMRU	
PacketTooLongs	Number of received packets that have been discarded because their length exceeded the MRU. This counter is a component of the ifInErrors variable that is associated with the interface that represents this PPP Link. NOTE: packets which are longer than the MRU but which are successfully received and processed are NOT included in this count.

Viewing PPP LQR

To display PPP LQR statistics:

- 1 On the device view, right-click the port.
- 2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 25).







- 3 Click the PPP LQR tab.

The PPP LQR tab opens (Figure 27).

Figure 27 graphSonetPort dialog box — PPP LQR tab

10.125.200.45 - graphSonetPort 2/3

POS	PPP Link	PPP LQR	Section	Line	FE Line	Path	FE Path	
			AbsoluteValue	Cumulative	Average/sec	Minimum/sec	Maximum/sec	LastVal/sec
Quality			0					
InGoodOctets			0 0.0	0.0	0.0	0.0	0.0	0.0
LocalPeriod			0					
RemotePeriod			0					
OutLQRs			0 0.0	0.0	0.0	0.0	0.0	0.0
InLQRs			0 0.0	0.0	0.0	0.0	0.0	0.0



CloseHelp...

Poll Interval: 10s0h:0m:30s

Table 24 describes the fields in the PPP LQR tab.

Table 24 PPP LQR tab fields

Field	Description
Quality	Quality number.
InGoodOctets	Number of good octets received on the interface.
LocalPeriod	Time interval in 100th of a second between link quality reporting from local end.
RemotePeriod	Time interval in 100th of a second between link quality reporting from remote end.
OutLQRs	Value of the OutLQRs counter on the local node for the link.
InLQRs	Value of the InLQRs counter on the local node for the link.

Viewing Section statistics

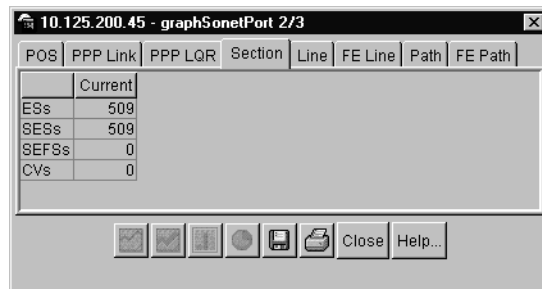
To display Section statistics:

- 1 On the device view, right-click the port.
- 2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed ([Figure 25 on page 81](#)).

- 3 Click the Section tab.

The Section tab opens ([Figure 28](#)).

Figure 28 graphSonetPort dialog box — Section tab

[Table 25](#) describes the fields in the Section tab.

Table 25 Section tab fields

Field	Description
ESs	Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, LOP.
SESSs	Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects.
SEFSs	Severely Errored Framing Second (SEFS) is a second containing one or more SEF events.
CVs	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.

Viewing Line statistics

To display Line statistics:

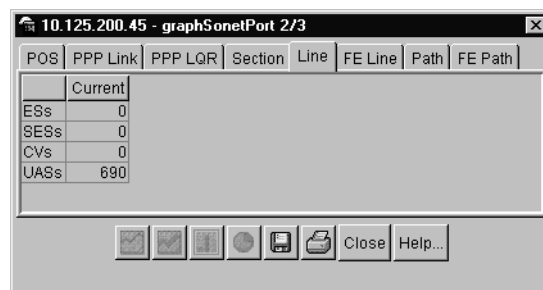
- 1 On the device view, right-click the port.
- 2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed ([Figure 25 on page 81](#)).

- 3 Click the Line tab.

The Line tab opens ([Figure 29](#)).

Figure 29 graphSonetPort dialog box — Line tab



[Table 26](#) describes the fields in the Line tab.

Table 26 Line tab fields

Field	Description
ESs	Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP.
SEsSs	Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects.
CVs	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UASs	Number of seconds that the interface is unavailable.

Viewing FE Line statistics

To display FE Line statistics:

- 1 On the device view, right-click the port.
- 2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed ([Figure 25 on page 81](#)).

- 3 Click the FE Line tab.

The FE Line tab opens ([Figure 30](#)).

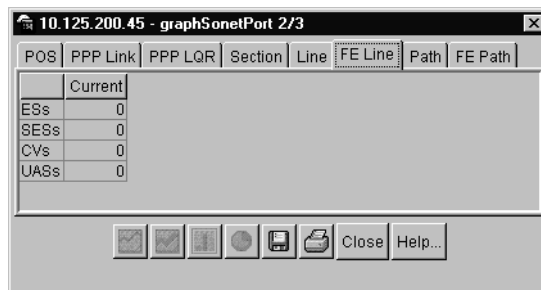
Figure 30 graphSonetPort dialog box — FE Line tab

Table 27 describes the fields in the FE Line tab.

Table 27 FE Line tab fields

Field	Description
ESs	Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP.
SESSs	Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects.
CVs	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UASs	Number of seconds that the interface is unavailable.

Viewing Path statistics

To display Path statistics:

- 1 On the device view, right-click the port.
- 2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 25 on page 81).

- 3 Click the Path tab.

The Path tab opens (Figure 31).

Figure 31 graphSonetPort dialog box — Path tab

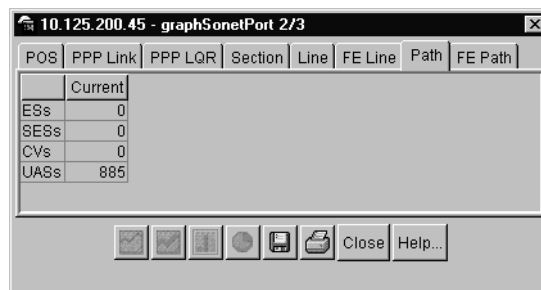


Table 28 describes the fields in the Path tab.

Table 28 Path tab fields

Field	Description
ESs	Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP.
SESSs	Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects.
CVs	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UASs	Number of seconds that the interface is unavailable.

Viewing FE Path statistics

To display Path statistics:

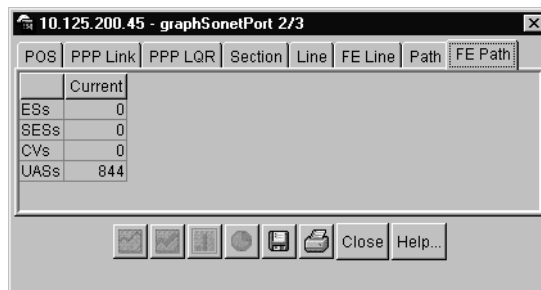
- 1 On the device view, right-click the port.
- 2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 25 on page 81).

- 3 Click the FE Path tab.

The FE Path tab opens (Figure 32).

Figure 32 graphSonetPort dialog box — FE Path tab



[Table 29](#) describes the fields in the FE Path tab.

Table 29 FE Path tab fields

Field	Description
ESs	Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP.
SESSs	Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects.
CVs	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UASs	Number of seconds that the interface is unavailable.

Chapter 6

Command line interface

This chapter contains information about the CLI commands relevant to the Passport 8683POS Module. For more information about the CLI for Passport 3.1, refer to:

- *Getting Started with Passport 8000 Series Management Software, Release 3.1*
- *Reference for the Passport 8000 Series Command Line Interface Switching Operations, Release 3.1*
- *Reference for the Passport 8000 Series Command Line Interface Routing Operations, Release 3.1*

This chapter contains the following topics:

- [“Configuration commands,”](#) next
- [“Show commands”](#) on page 99
- [“Monitor commands”](#) on page 126
- [“Test commands”](#) on page 127

Configuration commands

This section describes the configuration commands available with the Passport 8683POS Module. There are two types of configuration commands:

- Module commands
- Port commands



Note: If you replace one card with another type of card, Nortel Networks recommends that you go to the root level of the CLI directory before you use any CLI commands.

config poscard commands

The `config poscard` command allows you to:

- Reset the module
- Enable trace messages
- Display the image filename for the Passport 8683POS Module

The syntax is:

```
config poscard <posslot number>
```

where <posslot number> is the slot number of the module in the Passport 8600 chassis.

Table 30 describes the parameters and variables for the `config poscard` command.

Table 30 config poscard command parameters and variables

Parameters and variables	Description
card-reset	Resets the card.
debug <enable disable>	Enables or disables trace messages on the module to be displayed on the console of the switch.
info	Displays the image filename and debug mode for the module.
pos-console <enable disable>	Prints the trace message POS card. This is a priv command. When the pos-console is enabled (on the host), POS prints trace messages on the POS console. You can also use this command to query information on the POS card or port. To use this command, you must be in priv mode. The syntax to enter priv mode is: config/poscard/<port number>/priv

Port commands

The port commands allow you to perform general configuration on the Passport 8683POS Module. The syntax for the port config commands is:

- config pos <ports>
- config pos <ports> ip
- config pos <ports> ppp
- config pos <ports> sonet
- config pos <ports> stg
- config pos <ports> info

The port commands, variables and parameters and sub-commands are described in the following sections.

config pos command

[Table 31](#) describes the parameters and variables for the config pos <ports> command.

Table 31 config pos command parameters and variables

Parameters and variables	Description
default-vlan-id <vid>	Directs the switch to send the untagged frames to a default VLAN if received on a tagged port. <vid> is the VLAN ID of the default VLAN to which the discarded frames are sent.
info	Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings.
linktrap <enable disable>	Enables or disables the link up or down trap for a port.
lock <true false>	Locks a port for exclusive use if the port lock feature is globally enabled with the command <code>config sys set portlock on</code>
name <name>	Assign or set a name.
perform-tagging <enable disable>	Enables or disables the IEEE 802.1Q tagging on the port.
state <enable disable test>	Sets the state to enable, disable, or test.
tagged-frames-discard <enable disable>	Sets a port with tagging disabled to discard tagging frames.
untagged-frames-discard <enable disable>	Sets a port with tagging enabled to discard untagged frames.

config pos ip

Use the `config pos ip` command to configure IP parameters on the Passport 8683POS Module.



Note: When the Passport 8600 switch is interoperating with a Juniper router, the POS port must have the Juniper IP address configured. This is necessary because the Juniper routers do not provide their local IP address during PPP negotiation. The Passport 8600 switch requires the Juniper address for IPCP operations.

Table 32 describes the parameters and variables for the `config pos ip` command.

Table 32 config pos ip command parameters and variables

Parameters and variables	Description
create <ipaddr/mask> <vid> [mac_offset <value>]	Creates an IP address and assigns it to a VLAN, with the VLAN ID.
delete <ipaddr>	Deletes the IP address.
info	Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings.

config pos ppp

Use the `config pos ppp` command to configure Point-to-Point Protocol (PPP) parameters on the Passport 8683POS Module.

[Table 33](#) describes the parameters and variables for the `config pos ppp` command.

Table 33 config pos ppp command parameters and variables

Parameters and variables	Description
bridge-admin-status <open close>	Enables or disables the bridge control protocol.
fcs-size<32 16>	Sets the length of the redundancy check (fcs) to either 32 or 16.
info	Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings.
ip-admin-status <open close>	Enables or disables the IP control protocol.
ipx-admin-status <open close>	Enables or disables the IPX control protocol.
ipx-route-protocol <none rip>	Sets the protocol for IPX routing.
lqr-period <interval>	Sets the link quality reporting interval. Enter time in ms.
lqr-status <enable disable>	Enables or disables link quality reporting.
lqr-threshold <threshold>	Sets the link quality reporting threshold. Enter %.
magic-number <true false>	Sets a random number ("magic number") used in loopback detection. True detects loopback; false does not detect loopback.
ppp-stpmode <enable disable>	Encapsulates spanning tree BPDU packets as PPP. When enabled the BPDUs are encapsulated as in RFC 1638. When disabled, the BPDUs travel as bridged data (assuming bridge-admin-status is enabled).
remote-ip<ipaddr>	Sets the remote iP address.

config pos sonet command

Use the `config pos sonet` command to configure SONET parameters on the Passport 8683POS Module.

[Table 34](#) describes the parameters and variables for the `config pos sonet` command.

Table 34 config pos sonet command parameters and variables

Parameters and variables	Description
clock-source <internal line>	<p>Sets the clock source to:</p> <ul style="list-style-type: none"> • <internal>, which means clocking is derived from on-board clock. • <line>, which means clocking is derived from line. <p>Note that if you have two connected modules, you must set both to internal or one to line and one to internal; do not set both to line.</p>
framing <sonet sdh>	<p>Sets the framing to:</p> <ul style="list-style-type: none"> • <sonet>, which means the Synchronous Optical Network format, the standard format used in North America. • <sdh>, which means the Synchronous Digital Hierarchy clock format, the standard format used in Europe.
info	Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings.
signal label	Operational value of Path Signal Label (C2). The signal label value is reset when the scramble value is changed.
scramble <enable disable>	Enables or disables scrambling.
section-trace <sectiontrace>	Sets the integer that the section trace flag (j0) is set to (1...255).
z0-increment	Enables or disables z0 when the framing mode is set to SONET. This is a priv command - to use this command, you must be in privilege mode. The syntax to enter priv mode is: config/pos/<port number>/sonet priv

config pos stg command

Use the `config pos stg` command to configure STG parameters on the Passport 8683POS Module.

[Table 35](#) describes the parameters and variables for the `config pos stg` command.

Table 35 config pos stg command parameters and variables

Parameters and variables	Description
faststart <enable disable>	Enables or disables the fast start flag.
info	Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings.
pathcost <intval>	Sets the contribution of this port to the path cost.
priority <intval>	Sets the priority of this port.
stg <enable disable>	Enables or disables spanning tree protocol.

config pos info command

The `config pos info` command shows the current state of the port.

[Figure 33](#) shows a sample of the output from the `config pos info` command.

Figure 33 config pos info command sample output

```
Passport-8610:5/config# pos 10/5 info
Port 10/5 :
                lock : false
                name :
    unknown-mac-discard : disable
        default-vlan-id : 1
        perform-tagging : disable
    tagged-frames-discard : disable
    untagged-frames-discard : disable
                state : up
                linktrap : enable
                port-type : OC3-MMF
Passport-8610:5/config#
```

Show commands

This section describes the show commands available with the Passport 8683POS Module. These commands allow you to view information about the module:

```
show ports info pos [<ports>]

show ports stats pos activealarms [<ports>]

show ports stats pos felinecurrent [<ports>]

show ports stats pos felineinterval <intervalid> [<ports>]

show ports stats pos fepathcurrent [<ports>]

show ports stats pos fepathinterval <intervalid> [<ports>]

show ports stats pos linecurrent [<ports>]

show ports stats pos lineinterval <intervalid> [<ports>]

show ports stats pos linkstatus [<ports>]

show ports stats pos lqrstatus [<ports>]

show ports stats pos pathcurrent [<ports>]

show ports stats pos pathinterval <intervalid> [<ports>]

show ports stats pos pppiftbl [<ports>]

show ports stats pos sectioncurrent [<ports>]

show ports stats pos sectioninterval <intervalid> [<ports>]

show ports stats pos sonetmediumtbl [<ports>]

show tech
```

Refer to the *Reference for the Passport 8000 Series Command Line Interface Routing Operations, Release 3.1* and *Reference for the Passport 8000 Series Command Line Interface Switching Operations, Release 3.1* for a complete list of CLI commands.

show ports info pos

The `show ports info pos` command displays information ([Figure 34](#)) about the configuration for a specified port on the Passport 8683POS Module.

The command uses the syntax: `show ports info pos [<ports>]` and options: `all`, `ppp`, `sonet` in the following syntax:

```
show ports info pos all
```

```
show ports info pos ppp
```

```
show ports info pos sonet
```

show ports info pos all

[Figure 34](#) shows sample output for the `show ports info pos all` command, which includes information for the PPP and SONET parameters.

Figure 34 show ports info pos all command output

```

Passport-8610:5/show/ports/info/pos# all
=====
SONET Config Info
=====
PORT   FRAMING   CLOCK      SECTION    SIGNAL
NUM    MODE      SOURCE      TRACE      LABEL  SCRAMBLE
-----
10/1   sonet     line 1      0x16       enable
10/3   sonet     internal 1  0x16       enable
=====
SONET Local Operational Info
=====
PORT   FRAMING   CLOCK      SECTION    SIGNAL
NUM    MODE      SOURCE      TRACE      LABEL  SCRAMBLE
-----
10/1   sonet     line       1          0x16   enable
10/3   sonet     internal 1  0x16   enable
=====
PPP Config Info
=====
PORT   ADMIN      BRIDGE      IP          IPX          MAGIC PPP
NUM    STATUS      ADMIN      ADMIN      ADMIN      NUMBERSTPMODE LQSTATUS
-----
10/1   up          open        close       close       false enable enable
10/3   up          open        close       close       false enable enable

PORT   FCS   IPX ROUTE   LQR-QUAL   LQR-QUAL
NUM    SPEED MRU   SIZE PROTOCOL THRESHOLD  PERIOD REMOTE IP
-----
10/1   OC3-MMF 1936 32  rip          95          100          0.0.0.0 -M
10/3   OC3-MMF 1936 32  rip          95          100          0.0.0.0 -M

PORT IPX NET
NUM  ADDR
-----
10/1 00000000
10/3 00000000
=====
PPP Local Operational Info
=====
PORT   STATUS      LCP          BRIDGE      IP          IPX          MAGIC
NUM    OPERATE      STATUS      STATUS      STATUS      STATUS      NUMBER  STPMODE
-----
10/1   up          up          down        up          down        false enable
10/3   up          up          down        up          down        false enable

```

Figure 35 show ports info pos all command output (continued)

```

PORT  PPP      FCS  IPX ROUTE  LQR-QUAL  LQR-QUAL
NUM   LQSTATUS  MRU   SIZE PROTOCOL THRESHOLD  PERIOD    REMOTE IP
-----
10/1  enable    1936  32   none      95         100      10.32.6.14
10/3  enable    1936  32   none      95         100      10.32.6.10

PORT  IPX NET
NUM   ADDR
-----
10/1  00000000
10/3  00000000
=====
                                Other Info
=====
PORT  POS S/W  PLD      FRAMER  CARD
NUM   VERSION VERSION VERSION VERSION
-----
10/1  51        7        2        POS  7

Passport-8610:5/show/ports/info/pos# all

```

[Table 36](#) describes the fields for output of the `show ports info pos all` command

Table 36 Information fields for output of the show ports info pos all command

Field	Description
PORT NUM	Port number.
FRAMING MODE	Indicates whether the framing mode is either: <ul style="list-style-type: none"> sonet sdh
CLOCK SOURCE	Indicates whether the clock source is either: <ul style="list-style-type: none"> line internal
SECTION TRACE	Indicates the integer that the section trace flag (j0) is set to.
SIGNAL LABEL	Operational value of Path Signal Label (C2). The signal label value is reset when the scramble value is changed.
SCRAMBLE	Enables or disables the scrambling option.
ADMIN STATUS	Sets the port to one of the following states: <ul style="list-style-type: none"> up down testing
BRIDGE ADMIN	This parameter indicates bridged traffic within PPP.
IP ADMIN	This parameter indicates the IP traffic (link) within PPP.
IPX ADMIN	This parameter indicates the IPX traffic (link) within PPP.
MAGIC NUMBER	If set to enable, selects a random number ("magic number") used in loopback detection. enable detects loopback; disable does not detect loopback.
STPMODE	Spanning Tree Protocol mode - This parameter enables BPDUs to be received or transmitted with BPDU specific encapsulation. When disabled, encapsulated within Ethernet frames.
PPP LQSTATUS	Sets the link quality reporting interval.
SPEED	Displays the current operating speed of the port. It can be either 155 or 622 Mb/s depending on the type of interface installed.

Table 36 Information fields for output of the show ports info pos all command (continued)

Field	Description
MRU	Size (in octets) of the largest packet that can be sent or received on the interface. For IPCP and IPXCP, the maximum is 1936. When BCP is enabled, however, the maximum is 1934. Check which NCP is enabled before configuring the Mru. Note: The Bridge Control Protocol (BCP) is enabled on the Passport 8683POS Module by default.
FCS SIZE	Sets the length of the redundancy check (fcs) to either 32 or 16.
IPX ROUTE PROTOCOL	Sets the protocol for IPX routing.
LQR-QUAL THRESHOLD	Indicates the link quality reporting threshold.
LQR-QUAL PERIOD	Indicates the link quality reporting interval.
REMOTE IP	Indicates the remote iP address.
IPX NET ADDR	Indicates the IPX net address.
STATUS OPERATE	Operational status.
LCP STATUS	Link Control Protocol status.
BRIDGE STATUS	Bridging status.
IP STATUS	Routing (IP) status.
IPX STATUS	Routing (IPX) status
PPP LQSTATUS	Point-to-Point status

show ports stats pos activealarms

This command displays active alarms on the Passport 8683POS Module port. The command uses the syntax:

```
show ports stats pos activealarms [<ports>]
```

Figure 36 shows output for the show ports stats pos activealarms command.

Figure 36 show ports stats pos activealarms command output

```
Passport-8610:5/show/ports# stats pos activealarms
=====
                        Active Alarms
=====
PORT
NUM      ACTIVE ALARM
-----
10/5      No Defect
10/6      LOS

Passport-8610:5/show/ports/stats/pos#
```

Table 37 describes the information fields for output for the show ports stats pos activealarms command.

Table 37 Information fields for output of the show ports stats pos activealarms command

Field	Description
PORT NUM	Port number.
ACTIVE ALARM	Displays which port has active alarms.

show ports stats pos felinecurrent

This command displays current statistics on the far end line, which is at the receiving end. The command uses the syntax:

```
show ports stats pos felinecurrent [<ports>]
```

Figure 37 shows sample output for the show ports stats pos felinecurrent command.

Figure 37 show ports stats pos felinecurrent command output

```

Passport-8610:5/show/ports/stats/pos# felinecurrent
=====
                        POS Far End Line Current Stats
=====
PORT      ERRORED SECONDS      SEVERELY ERRORED      CODE VIOLATION UNAVAILABLE
NUM        COUNT (ES)              COUNT (SES)           COUNT (CV-L) SECONDS (UAS)
-----
10/5       0                          0                      0              0
10/6       0                          0                      0              0

Passport-8610:5/show/ports/stats/pos#

```

[Table 38](#) describes the information fields for output of the show ports stats pos felinecurrent command.

Table 38 Information fields for output of the show ports stats pos felinecurrent command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-L)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS	Number of seconds that the interface is unavailable.

show ports stats pos felineinterval

This command displays statistics (Figure 38) on the far end line over a 15-minute interval. You specify which interval, or span of intervals, to display for the command. The command uses the syntax:

```
show ports stats pos felineinterval <intervalid>[<ports> ]
```

Figure 38 show ports stats pos felineinterval command output

```
Passport-8610:5/show/ports/stats/pos# felineinterval 4
=====
                POS Far End Line Interval Stats
=====
PORT      ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION UNAVAILABLE
NUM        COUNT (ES)         COUNT (SES)        COUNT (CV-L) SECONDS (UAS)
-----
10/5       0                       0                   0               0
10/6       0                       0                   0               0

INTERVAL ID = 4
Passport-8610:5/show/ports/stats/pos#
```

Table 39 describes the information fields for output of the show ports stats pos felineinterval command

Table 39 Information fields for output of the show ports stats pos felineinterval command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-L)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS (UAS)	Number of seconds that the interface is unavailable.
INTERVAL ID	Specified interval.

show ports stats pos fepathcurrent

This command displays current statistics ([Figure 39](#)) for the far end path, which is at the receiving end. The command uses the syntax:

```
show ports stats pos fepathcurrent [<ports>]
```

Figure 39 show ports stats pos fepathcurrent command output

```

Passport-8610:5/show/ports/stats/pos# fepathcurrent
=====
                POS Far End Path Current Stats
=====
PORT      ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION   UNAVAILABLE
NUM        COUNT (ES)         COUNT (SES)        COUNT (CV-P)     SECONDS (UAS)
-----
10/1         0                   0                  0                 0
10/3         0                   0                  0                527

Passport-8610:5/show/ports/stats/pos#

```


[Table 40](#) describes the information fields for output of the `show ports stats pos fepathcurrent` command.

Table 40 Information fields for output of the `show ports stats pos fepathcurrent` command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-P)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS (UAS)	Number of seconds that the interface is unavailable.

show ports stats pos fepathinterval

This command displays statistics ([Figure 40](#)) on the far end path over a 15-minute interval. You specify the interval or span of intervals to display. The command uses the syntax:

```
show ports stats pos fepathinterval <intervalid> [<ports>]
```

Figure 40 show ports stats pos fepathinterval command output

```

Passport-8610:5/show/ports/stats/pos# fepathinterval 1

=====
                        POS Far End Path Interval Stats
=====
PORT      ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION   UNAVAILABLE
NUM      COUNT (ES)      COUNT (SES)      COUNT (CV-P)      SECONDS (UAS)
-----
10/1         0                0                0                0
10/3         0                0                0                900

INTERVAL ID = 1
Passport-8610:5/show/ports/stats/pos#

```

[Table 41](#) describes the information fields for output of the show ports stats pos fepathinterval command.

Table 41 Information fields for output of the show ports stats pos fepathinterval command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-P)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS (UAS)	Number of seconds that the interface is unavailable.
INTERVAL ID	Specified interval.

show ports stats pos linecurrent

This command displays current statistics (Figure 41) for the line. The command uses the syntax:

```
show ports stats pos linecurrent [<ports>]
```

Figure 41 show ports stats pos linecurrent command output

Passport-8610:5/show/ports/stats/pos# linecurrent

=====					
POS Line Current Stats					
=====					
PORT	ERRORED SECONDS	SEVERELY ERRORED	CODE VIOLATION	UNAVAILABLE	
NUM	COUNT (ES)	COUNT (SES)	COUNT (CV-L)	SECONDS (UAS)	STATUS

10/1	0	0	0	277	No Defec
10/3	0	0	0	787	Line AIS
Passport-8610:5/show/ports/stats/pos#					

Table 42 describes the information fields for output of the show ports stats pos linecurrent command.

Table 42 Information fields for output of the show ports stats pos linecurrent command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-P)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS (UAS)	Number of seconds that the interface is unavailable.
STATUS	Status of defects.

show ports stats pos lineinterval

This command displays statistics ([Figure 42](#)) for the line over a 15-minute interval. You can specify any interval or span of intervals. The command uses the syntax:

```
show ports stats pos lineinterval <intervalid>[<ports>]
```

Figure 42 show ports stats pos lineinterval command output

```

Passport-8610:5/show/ports# stats pos lineinterval 1

=====
                                POS Line Interval Stats
=====
PORT      ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION   UNAVAILABLE
NUM        COUNT (ES)        COUNT (SES)        COUNT (CV-L)     SECONDS (UAS)
-----
3/5        0                   0                   0                 0
3/6        0                   0                   0                 0
INTERVAL ID = 1
Passport-8610:5/show/ports#

```

[Table 43](#) describes the information fields for output of the `show ports stats pos lineinterval` command.

Table 43 Information fields for output of the `show ports stats pos lineinterval` command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-P)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS (UAS)	Number of seconds that the interface is unavailable.
STATUS	Indicates status of defects.

show ports stats pos linkstatus

This command displays current statistics ([Figure 43](#)) on the frames coming across the PPP link. The command uses the syntax:

```
show ports stats pos linkstatus [<ports>]
```

Figure 43 show ports stats pos linkstatus command output

```
Passport-8610:5/show/ports/stats/pos# linkstatus

=====
                        POS Link Stats
=====
PORT    BAD ADDR    BAD CNTL    TOO LONG    BAD FCS
NUM      FRAMES      FRAMES      FRAMES      FRAMES      MRU
-----
10/1     0           0           0           1936  1936
10/3     0           0           0           0       0

Passport-8610:5/show/ports/stats/pos#
```

[Table 44](#) describes the information fields for output of the `show ports stats pos linkstatus` command.

Table 44 Information fields for output of the `show ports stats pos linkstatus` command

Field	Description
PORT NUM	Port number.
BAD ADDR FRAMES	Number of packets received with an Incorrect Address Field. This counter is a Component of the <code>ifInErrors</code> variable that is associated with the interface that represents this PPP Link.
BAD CNTL FRAMES	Number of packets received on this link with an incorrect address field.
TOO LONG FRAMES	Number of packets received and discarded because their length exceeded the MRU.
BAD FCS FRAMES	Number of packets received with an incorrect FCS size.
MRU	Maximum Receive Unit

show ports stats pos lqrstatus

This command displays current statistics (Figure 44) on the link quality reporting. The command uses the syntax:

```
show ports stats pos lqrstatus [<ports>]
```

Figure 44 show ports stats pos lqrstatus command output

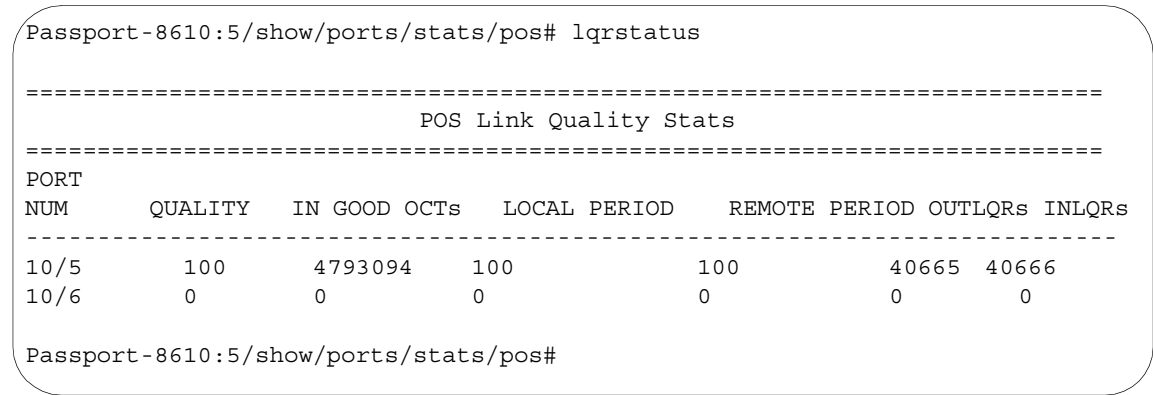


Table 45 describes the information fields for output of the show ports stats pos lqrstatus command.

Table 45 Information fields for output of the show ports stats pos lqrstatus command

Field	Description
PORT NUM	Port number.
QUALITY	Number of quality issues.
IN GOOD OCTs	Number of good octets received at the port.
LOCAL PERIOD	Time interval in 100th of a second between link quality reporting from the local end.
REMOTE PERIOD	Time interval in 100th of a second between link quality reporting from the remote end.
OUT LQRs	Value of the OutLQRs counter on the local node for the link.
INLQRs	Value of the InLQRs counter on the local node for the link.

show ports stats pos pathcurrent

This command displays current statistics (Figure 45) on the path, on the transmitting end. The command uses the syntax:

```
show ports stats pos pathcurrent [<ports>]
```

Figure 45 show ports stats pos pathcurrent command output

```
Passport-8610:5/show/ports/stats/pos# pathcurrent
```

=====							
POS Path Current Stats							
=====							
PORT	ERRED	SECS	SEVERELY	ERRED	CODE	VIOLATION	UNAVAILABLE
NUM	COUNT	(ES)	COUNT	(SES)	COUNT	(CV-P)	SECONDS (UAS)

							STATUS
							WIDTH

10/5	0	0			0	0	No Defect
10/6	0	0			0	302	Path AIS

```
Passport-8610:5/show/ports/stats/pos#
```

Table 46 describes the information fields for output of the show ports stats pos pathcurrent command.

Table 46 Information fields for output of the show ports stats pos pathcurrent command

Field	Description
PORT NUM	Port number.
ERRED SECS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-P)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS (UAS)	Number of seconds that the interface is unavailable.
STATUSWIDTH	Indicates status and number of defects.

show ports stats pos pathinterval

This command displays statistics ([Figure 46](#)) on the path for a 15-minute interval. You specify the interval or span of intervals to display. The command uses the syntax:

```
show ports stats pos pathinterval <intervalid> [<ports>]
```

Figure 46 show ports stats pos pathinterval command output

```
Passport-8610:5/show/ports/stats/pos# pathinterval 4

=====
                        POS Path Interval Stats
=====
PORT      ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION   UNAVAILABLE
NUM        COUNT (ES)          COUNT (SES)        COUNT (CV-P)     SECONDS (UAS)
-----
10/1       0                   0                  0                0
10/3       0                   0                  0                900

INTERVAL ID = 4
Passport-8610:5/show/ports/stats/pos#
```

[Table 47](#) describes the information fields for output of the `show ports stats pos pathinterval` command.

Table 47 Information fields for output of the `show ports stats pos pathinterval` command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-P)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
UNAVAILABLE SECONDS (UAS)	Number of seconds that the interface is unavailable.
INTERVAL ID	Specified interval.

show ports stats pos pppiftbl

This command displays statistics ([Figure 47](#)) on the PPP link. The command uses the syntax:

```
show ports stats pos pppiftbl [<ports>]
```

Figure 47 show ports stats pos pppiftbl command output

```

Passport-8610:5/show/ports/stats/pos# pppiftbl
=====
                        PPP IF Table Contents
=====
PORT      OCTETS      PACKETS      DROPPED      ERRORED      UNKNOWN
NUM      RECEIVED    RECEIVED    RX  PACKETS  RX  PACKETS  PROTOCOLS
-----
10/1  4637499      65449       0           0           0
10/3   0           0           0           0           0

PORT      OCTETS      PACKETS      DROPPED      ERRORED
NUM      TRANSMITTED  TRANSMITTED  TX  PACKETS  TX  PACKETS
-----
10/1    2769051532  4610831      0           0
10/3     20           1           0           0

Passport-8610:5/show/ports/stats/pos#

```

[Table 48](#) describes the information fields for output of the show ports stats pos pppiftbl command.

Table 48 Information fields for output of the show ports stats pos pppiftbl command

Field	Description
PORT NUM	Port number.
OCTETS RECEIVED	Number of octets received at the port.
PACKETS RECEIVED	Number of packets received at the port.
DROPPED RX PACKETS	Number of RX packets dropped at the port.
ERRORED RX PACKETS	Number of RX packet errors at the port.
UNKNOWN PROTOCOLS	Number of unknown protocols.
OCTETS TRANSMITTED	Number of octets transmitted.
PACKETS TRANSMITTED	Number of packets transmitted.
DROPPED TX PACKETS	Number of TX packets dropped at the port.
ERRORED TX PACKETS	Number of TX packet errors at the port.

show ports stats pos sectioncurrent

This command displays the current statistics ([Figure 48](#)) on the section. The command uses the syntax:

```
show ports stats pos sectioncurrent [<ports>]
```

Figure 48 show ports stats pos sectioncurrent command output

```
Passport-8610:5/show/ports/stats/pos# sectioncurrent

=====
                        POS Section Current Stats
=====
PORT  ERRORERD SECONDS SEVERELY ERRORERD CODE VIOLATION  SEVERELY ERRORERD
NUM   COUNT  (ES)      COUNT  (SES)      COUNT  (CV-S)      FRAMES (SEF) STATUS
-----
10/1      0         0              0              0              No Defect
10/3     620       620              0              0              LOS

Passport-8610:5/show/ports/stats/pos#
```

[Table 49](#) describes the information fields for output of the `show ports stats pos sectioncurrent` command.

Table 49 Information fields for output of the show ports stats pos sectioncurrent command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-S)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
SEVERELY ERRORED FRAMES (SEF)	Number of seconds that the interface is unavailable.
STATUS	Indicates status of defects.

show ports stats pos sectioninterval

This command displays statistics ([Figure 49](#)) on the section over a 15-minute interval. You specify the interval or span of intervals to display. The command uses the syntax:

```
show ports stats pos sectioninterval <intervalid> [<ports>]
```

Figure 49 show ports stats pos sectioninterval command output

```

Passport-8610:5/show/ports/stats/pos# sectioninterval 3

=====
                        POS Section Interval Stats
=====
PORT      ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION SEVERELY ERRORED
NUM        COUNT (ES)         COUNT (SES)        COUNT (CV-S)  FRAMES (SEF)
-----
10/1        0                   0                   0              0
10/3        900                900                0              0

INTERVAL ID = 10
Passport-8610:5/show/ports/stats/pos#

```

[Table 50](#) describes the information fields for output of the show ports stats pos sectioninterval command.

Table 50 Information fields for output of the show ports stats pos sectioninterval command

Field	Description
PORT NUM	Port number.
ERRORED SECONDS COUNT (ES)	Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP).
SEVERELY ERRORED COUNT (SES)	Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects.
CODE VIOLATION COUNT (CV-S)	Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected.
SEVERELY ERRORED FRAMES (SEF)	Severely Errored Framing Second (SEFs) is a second containing one or more SEF events.
INTERVAL ID	Specified interval.

show ports stats pos sonetmediumtbl

This command displays statistics ([Figure 50](#)) on the SONET medium. The command uses the syntax:

```
show ports stats pos sonetmediumtbl [<ports>]
```

Figure 50 show ports stats pos sonetmediumtbl command output

```
Passport-8610:5/show/ports/stats/pos# sonetmediumtbl
```

```
=====
                        POS SONET Medium Table
=====
PORT      MEDIUM   TIME      VALID      LINE      LINE      CIRCUIT
NUM       TYPE      ELAPSED   INTERVALS CODING     TYPE      ID
-----
10/1      1          816       45         4          4          52689832
10/3      1          816       45         4          4          52689832
```

```
Passport-8610:5/show/ports/stats/pos#
```

[Table 51](#) describes the information fields for output of the `show ports stats pos sonetmediumtbl` command.

Table 51 Information fields for output of the show ports stats pos sonetmediumtbl command

Field	Description
PORT NUM	Port number.
MEDIUM TYPE	Identifies whether a sonet or sdh signal is used across the interface.
TIME ELAPSED	Number of seconds, including partial seconds, that have elapsed since the beginning of the current measurement period. If the current interval exceeds the maximum value, the agent will return the maximum value.
VALID INTERVALS	Number of previous 15-minute intervals for which data was collected.
LINE CODING	Line coding for this interface. The B3ZS and CMI are used for electrical SONET/SDH signals (STS-1 and STS-3). The Non-Return to Zero (NZR) and the Return to Zero are used for optical SONET/SDH signals.
LINE TYPE	Line type for this interface. The line types are Single Mode fiber or Multi-Mode fiber interfaces.
CIRCUIT ID	Transmission vendor's circuit identifier, to facilitate troubleshooting.

show tech command

The `show tech` command has the following syntax:

```
show tech
```

[Figure 51](#) shows sample output for the `show tech` command.

Figure 51 show tech command output

```
Passport-8610:5/show/tech

General Info :
SysName      : Passport-8610
SysUpTime    : 0 day(s), 17:00:58
SysContact   : support@nortelnetworks.com
SysLocation  : 4401 Great America Parkway, Santa Clara, CA
              95052

Chassis Info :
Chassis      : 8010
Serial#      :
HwRev        :
NumSlots     : 10
NumPorts     : 58
GlobalFilter : enable
VlanBySrcMac : disable
Ecn-Compatib: enable
BaseMacAddr  : 00:80:2d:01:00:00
```

[Table 52](#) defines the information fields for output of the show tech command.

Table 52 Information fields for output of the show tech command

Field	Description
SysName	System name.
SysUpTime	Period for which the system has been active.
SysContact	Support contact.
SysLocation	Physical location of the system.
Chassis Info	Description of the chassis.
Chassis	Module number.
Serial	Serial number.
HwRev	Hardware revision information.
NumSlots	Number of slots.
NumPorts	Number of ports.
GlobalFilter	Global filter enabled or disabled.
VlanBySrcMac	Indicates whether vlans have been enabled.
Ecn-Compatib	Indicates whether the system is enabled for ecn-compatibility.
BaseMacAddr	MAC Address.

Monitor commands

This section describes the monitor commands available with the Passport 8683POS Module. The monitor commands are self-updating show commands, set from the CLI for duration and interval. These commands allow you to view constantly updating information about the module. The monitor commands use the following syntax:

```
monitor ports stats pos activealarms [<ports>]
monitor ports stats pos felinecurrent [<ports>]
monitor ports stats pos felineinterval <intervalid>
 [<ports>]
monitor ports stats pos fepathcurrent [<ports>]
monitor ports stats pos fepathinterval <intervalid>
 [<ports>]
monitor ports stats pos linecurrent [<ports>]
```

```
monitor ports stats pos lineinterval <intervalid> [<ports>]
monitor ports stats pos linkstatus [<ports>]
monitor ports stats pos lqrstatus [<ports>]
monitor ports stats pos pathcurrent [<ports>]
monitor ports stats pos pathinterval <intervalid> [<ports>]
monitor ports stats pos pppiftbl [<ports>]
monitor ports stats pos sectioncurrent [<ports>]
monitor ports stats pos sectioninterval <intervalid>
[<ports>]
monitor ports stats pos sonetmediumtbl [<ports>]
```

Test commands

This section describes the test commands available with the Passport 8683POS Module. The test commands allow you test the module while the switch is operating. The tests do not interfere with the module's normal switching functions, but they do occupy the CPU. The test commands allow you to test:

- Hardware
- LEDS
- Internal and external loopback

The syntax for the test commands is:

```
test hardware <ports>
```

```
test led <ports> <tx|rx> <off|yellow|green>
```

```
test loopback <ports> [<int|ext>]
```

Using the test commands



Note: You must specify a slot and port number with the test commands.

Refer to the *Reference for the Passport 8000 Series Command Line Interface Switching Operations, Release 3.1* and *Reference for the Passport 8000 Series Command Line Interface Routing Operations, Release 3.1* for a complete list of CLI test commands.

test hardware

Use the `test hardware` command to run diagnostics on the Passport 8683POS Module. The command uses the following syntax:

```
test hardware <ports>
```

The output from the `test hardware` command is shown in [Figure 52](#).

Figure 52 test hardware command output

```
Passport-8610:test hardware 10/5
```

```
Port: 10/5
```

```
  IfIndex: 645
```

```
  Result: success
```

test led

Use the `test led` command to see if the lights on the port LEDs are functioning correctly on the Passport 8683POS Module. The command uses the following syntax:

```
test led <ports> <tx|rx> <off|yellow|green>
```



Note: You must physically inspect the LEDs on the actual Passport 8683POS Module to view the results of these tests.

Table 53 describes the parameters and variables for the `test led` command.

Table 53 test led command parameters and variables

Parameters and variables	Description
tx	Tests the LED for transmitting data on each port.
rx	Tests the LED for receiving data on each port.
off	Tests whether the LEDs go off correctly.
yellow	Tests whether the LEDs can light yellow.
green	Tests whether the LEDs can light green.

test loopback

Use the `test loopback` command to run a loopback test on the port. You can perform either an internal or an external loopback test on the POS module. The default is internal loopback. The syntax is:

```
test loopback <ports> <int|ext>
```



Note: The loopback tests test only the control path; they do not test the data path.

To test for loopback:

- 1 To configure the port for testing, enter:
`config pos <ports> test`
- 2 To test the loopback, either internal or external, enter:
`test loopback <ports> <int|ext>`

3 To stop the loopback testing, enter:

```
test stop loopback <ports>
```

Figure 53 shows output for the `test loopback` command.

Figure 53 test loopback command output

```
Passport-8610:5/show/test# loopback 10/6
```

```
Running an internal loopback test...
```

```
Current test results:
```

```
    Port: 10/6
```

```
    IfIndex: 645
```

```
    Result: inProgress
```

```
PassCount: 0
```

```
FailCount: 0
```

Chapter 7

Web management

This chapter contains information about the Web management interface available with the Passport 8683POS Module. The Web interface allows you to monitor the Passport 8683POS Module through a World Wide Web browser from anywhere on your network. The Web interface provides many of the same monitoring features as the Device Manager software.

For information on:

- Accessing your switch through the Web interface
- Descriptions of the Web page layout

refer to *Getting Started with the Passport 8000 Series Management Software*.

This chapter provides an overview of the Passport 8683POS Module parameters and statistics which you can monitor through the Web interface.

POS folder

Use the Web interface to monitor the Passport 8683POS Module parameters. When you access the Web interface, the System page is displayed. The POS folder is in the navigation pane on the left of the System page ([Figure 54](#)).

Figure 54 System page

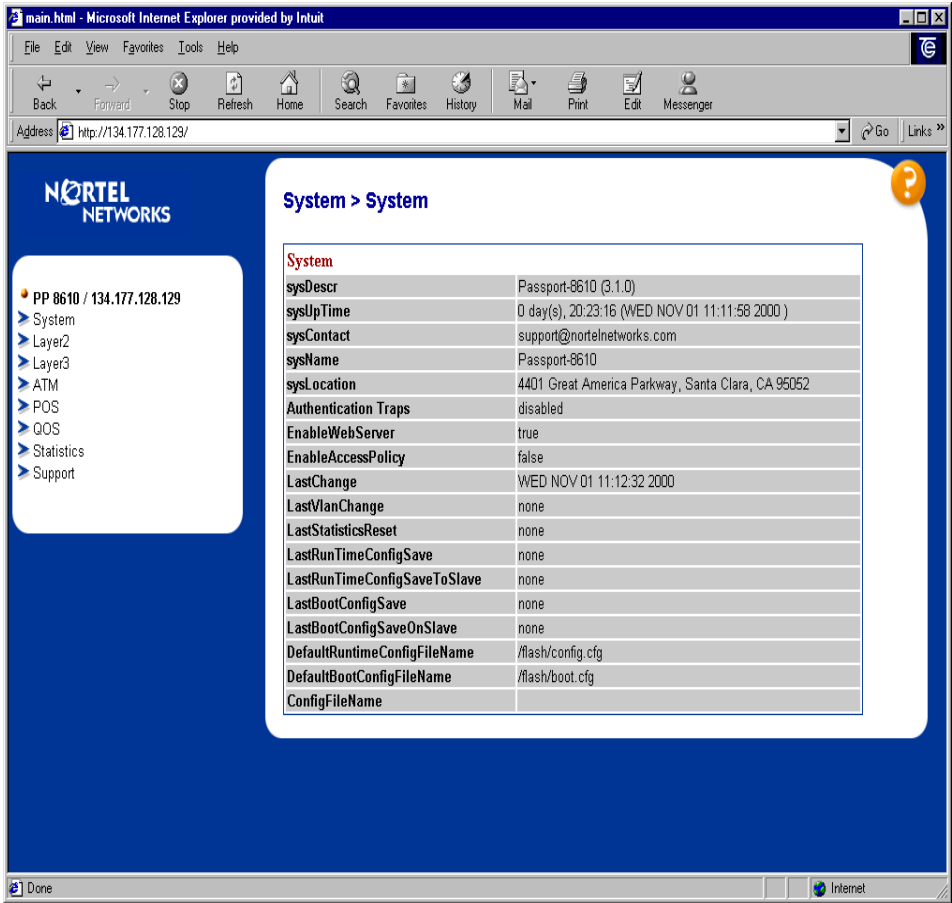
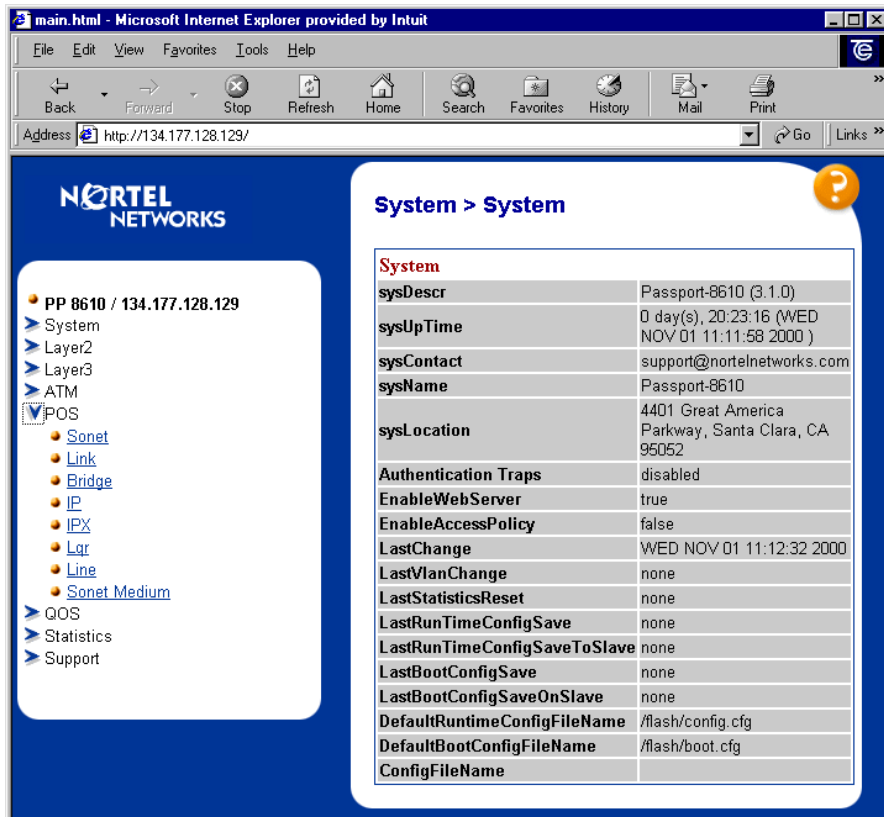


Table 54 describes the fields displayed in the System page.

Table 54 System page fields

Field	Description
sysDescr	System description.
sysUpTime	Period for which the system has been active.
sysContact	Support contact.
sysName	System name.
sysLocation	Physical location of the system.
Authentication Traps	Indicates whether traps have been generated for the interface.
EnableWebServer	Indicates whether the web server has been enabled.
EnableAccessPolicy	Indicates whether access policy has been enabled.
LastChange	Value of sysUpTime at the time the interface entered its current operational state.
LastVlanChange	Value of sysUpTime at the time the VLAN entered its current operational state.
LastStatisticsReset	Value of sysUpTime at the time that statistics were enabled.
LastRuntimeConfigSave	Value of sysUpTime at the time that configuration was saved.
LastRuntimeConfigSavetoSlave	Value of sysUpTime at the time that configuration was saved.
LastBootConfigSave	Value of sysUpTime at the time the last reboot occurred.
LastBootConfigSaveOnSlave	Value of sysUpTime at the time the last reboot saved configuration changes.
DefaultlRuntimeConfigFileName	Default runtime configuration file name.
DefaultBootConfigFileName	Default configuration file name.
ConfigFileName	Configuration file name.

When you click on POS in the navigation pane, the headings in the POS menu are displayed. The headings provide options for viewing POS parameters ([Figure 55](#)).

Figure 55 System page showing the POS menu

To view the current SONET parameters, in the POS menu, click Sonet. The Sonet page opens (Figure 56).

Figure 56 SONET page

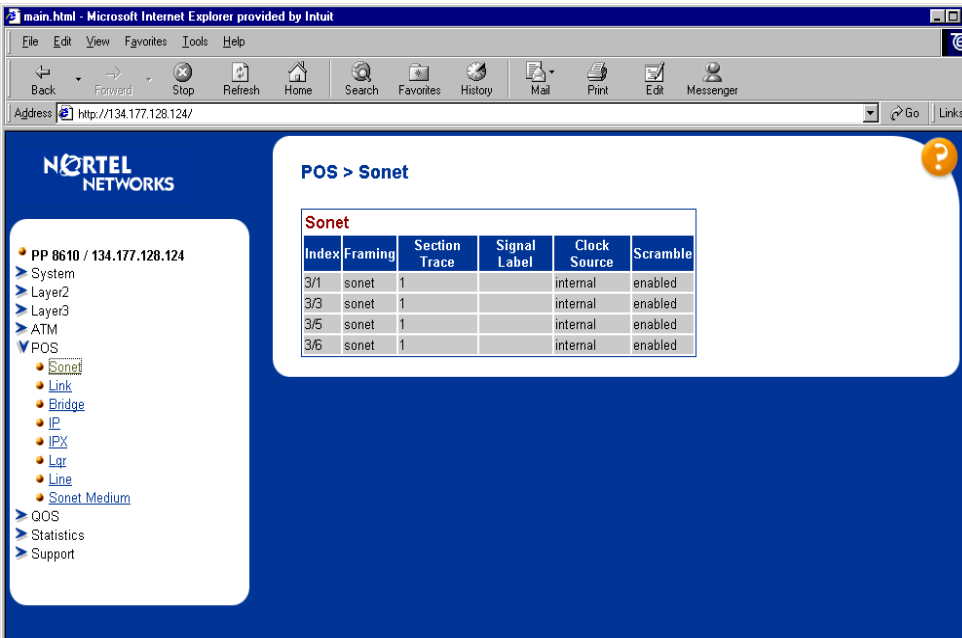


Table 55 describes the fields displayed in the SONET page.

Table 55 SONET page fields

Field	Description
Index	Unique value assigned to each interface.
Framing	Indicates if framing is enabled or disabled.
Section Trace	Indicates the integer that the section trace is set to.
Signal Label	Indicates operational value of Path Signal Label.
Clock Source	Indicates setting of the clock source.
Scramble	Indicates operational value of SONET scramble.

To view the current link parameters, in the POS menu, click Link. The Link page opens (Figure 57).

Figure 57 Link page

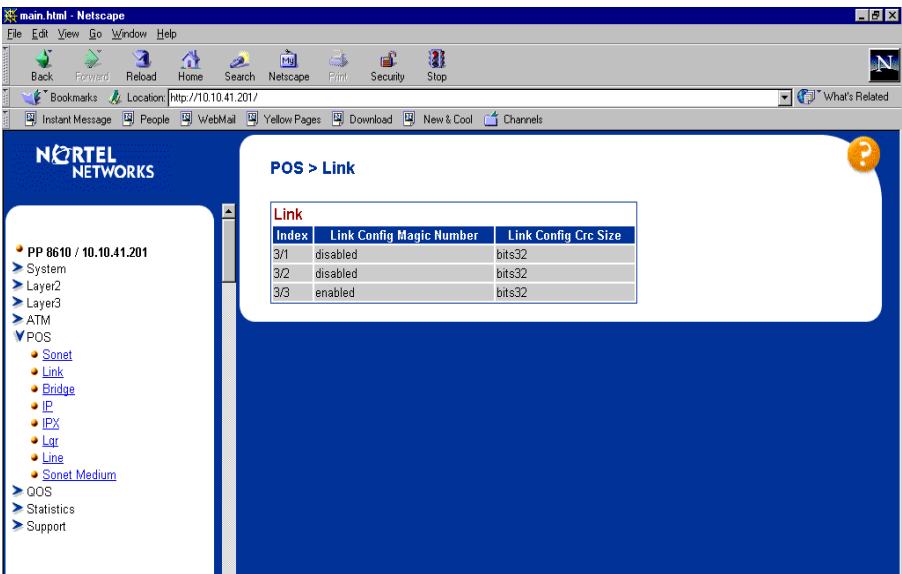


Table 56 describes the fields displayed in the Link page.

Table 56 Link page fields

Field	Description
Index	Unique value assigned to each interface.
Link Config Magic Number	If set to enable, selects a random number (“magic number”) used in loopback detection.
Link Config Crc Size	Indicates if the size of redundancy check field used in PPP framing has been configured.

To view the current bridging parameters, in the POS menu, click Bridge. The Bridge page opens (Figure 58).

Figure 58 Bridge page

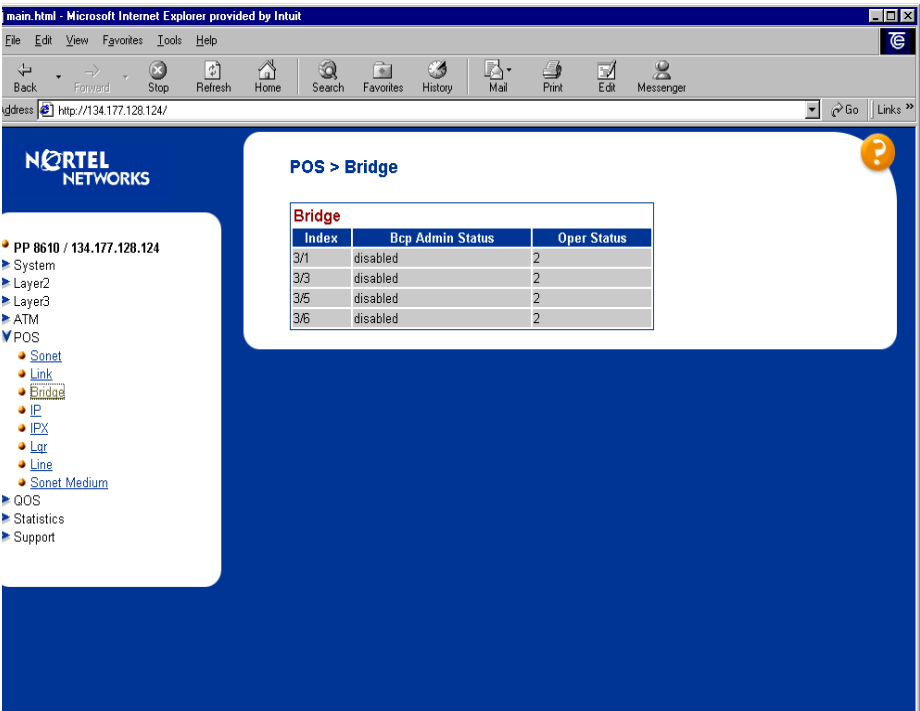


Table 57 describes the fields displayed in the Bridge page.

Table 57 Bridge page fields

Field	Description
Index	Unique value assigned to each interface.
Bcp Admin Status	Indicates the status of bridging.
Oper Status	Indicates the operational state of bridging.

To view the current IP parameters, in the POS menu, click IP. The IP page opens (Figure 59).

Figure 59 IP page

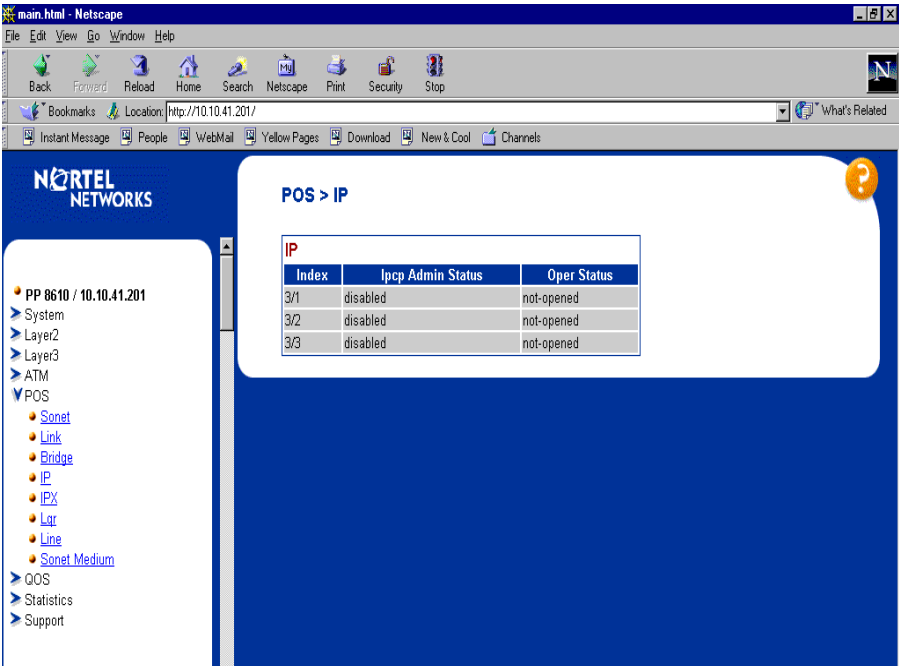


Table 58 describes the fields displayed in the IP page.

Table 58 IP page

Field	Description
Index	Unique value assigned to each interface.
Ipcp Admin Status	Indicates the status of IP routing, either enabled or disabled.
Oper Status	Indicates the operational value of IP link.

To view the current IPX parameters, in the POS menu, click IPX. The IPX page opens (Figure 60).

Figure 60 IPX page

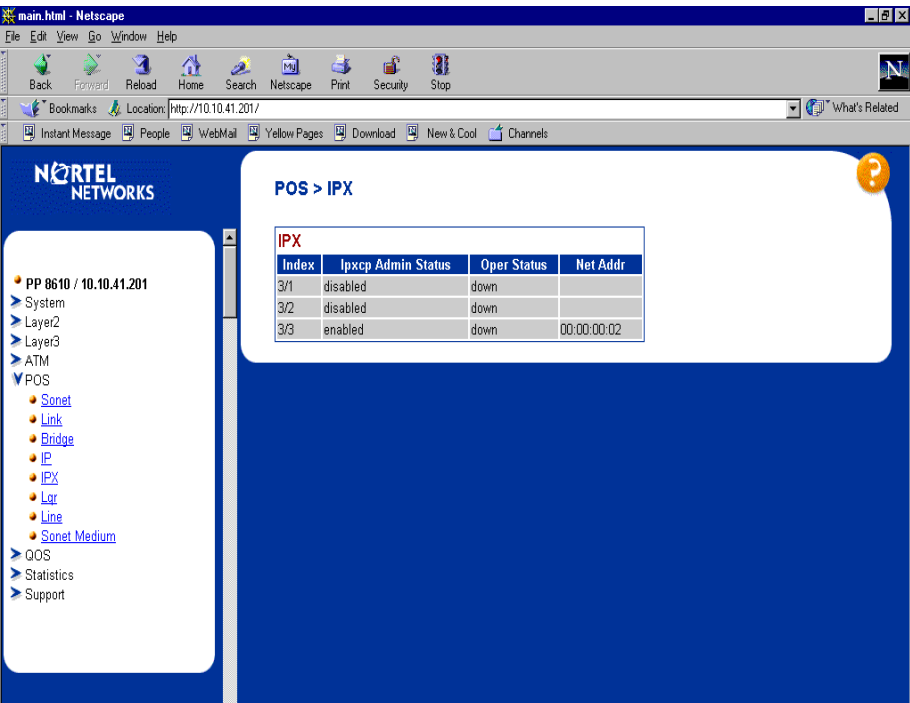


Table 59 describes the fields displayed in the IPX page.

Table 59 IPX page fields

Field	Description
Index	Unique value assigned to each interface.
Ipxcp Admin Status	Indicates the status of IPX routing, either enabled or disabled.
Oper Status	Indicates the operational value of IPX link.
Net Addr	Network address.

To view the current Lqr parameters, in the POS menu, click Lqr. The Lqr page opens (Figure 61).

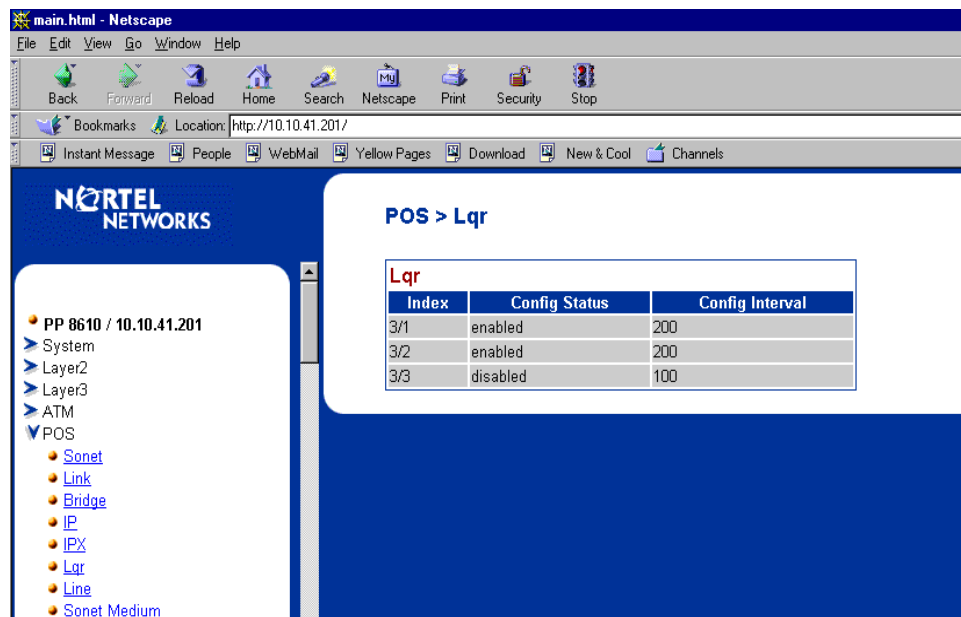
Figure 61 Lqr page

Table 60 describes the fields displayed in the Lqr page.

Table 60 Lqr page fields

Field	Description
Index	Unique value assigned to each interface.
Config Status	Status of link quality reporting.
Config Interval	Link quality reporting interval.

To view the current Line parameters, in the POS menu, click Line. The Line page opens (Figure 62).

Figure 62 Line page

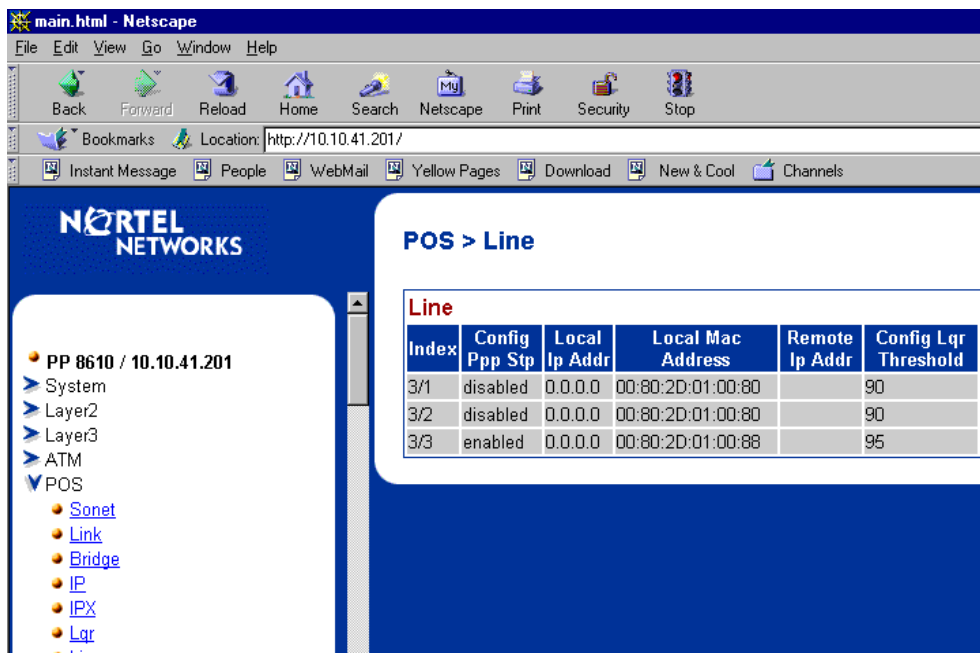


Table 61 describes the fields displayed in the Line page.

Table 61 Line page fields

Field	Description
Index	Unique value assigned to each interface.
Config PPP Stp	Status of PPP bridging.
Local Ip Addr	Local Internet Protocol address.
Remove IP Addr	Remote Internet Protocol address.
Config Lqr Threshold	Link quality reporting threshold.

To view the current Sonet Medium parameters, in the POS menu, click Sonet Medium. The Sonet Medium page opens (Figure 63).

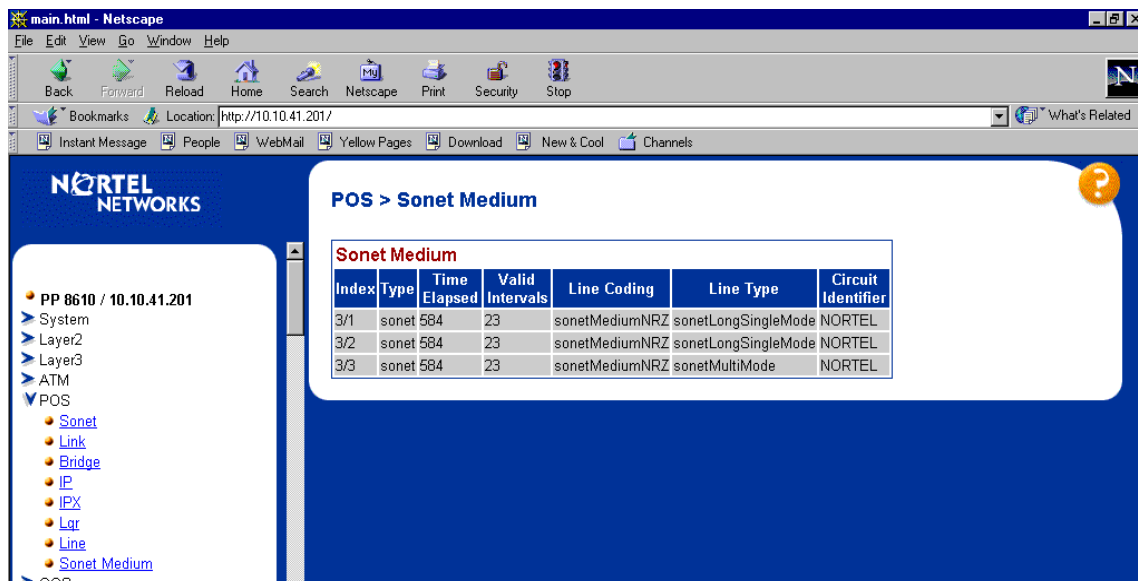
Figure 63 SONET Medium page

Table 62 describes the fields displayed in the SONET Medium page.

Table 62 SONET Medium page fields

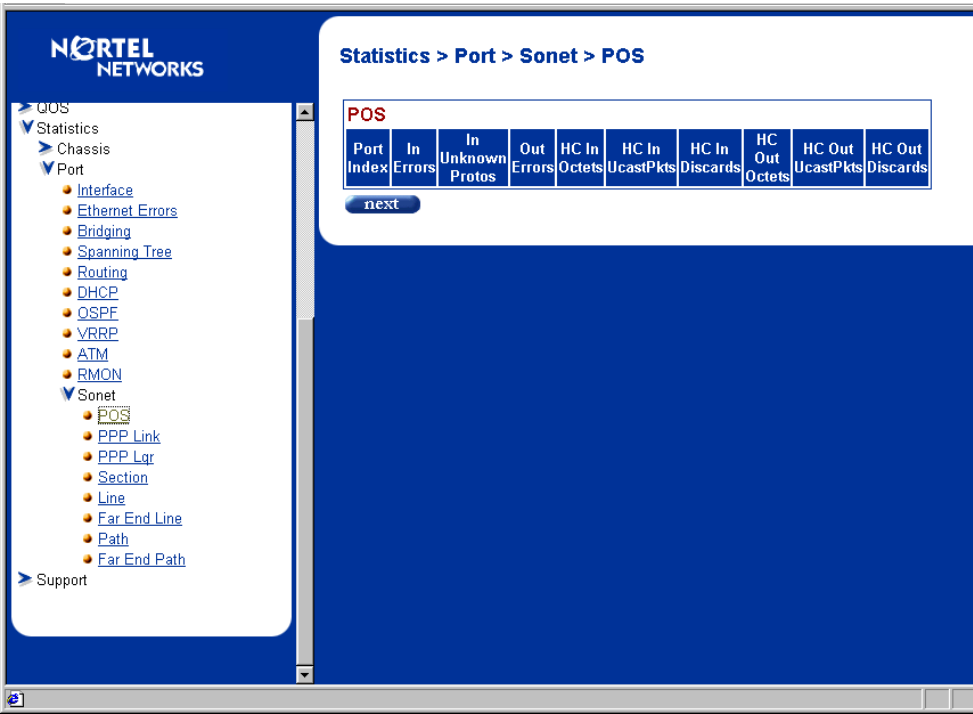
Field	Description
Index	Unique value assigned to each interface.
Type	Signal type, whether sonet or sdh.
Time Elapsed	Number of seconds that have elapsed since the beginning of the current measurement period.
Valid Intervals	Number of previous 15-minute intervals for which data was collected.
Line Coding	Line coding for this interface: the B3ZS and CMI are used for electrical SONE/SDH signals (STS-1 and STS-3). The Non-Return to Zero (NZR) and the Return to Zero are used for optical SONET/SDH signals.
Line Type	Line type: short and long range single-mode fiber or multimode fiber interfaces, and COAX and UTP for electrical interfaces.
Circuit Identifier	Transmission vendor's circuit identifier, to facilitate troubleshooting.

Statistics

Use the Web interface to view the Passport 8683POS Module statistics. Under the Statistics heading in the navigation pane, there are two options: Chassis and Port. Click Port to view the options. Sonet is the last entry in the Port folder.

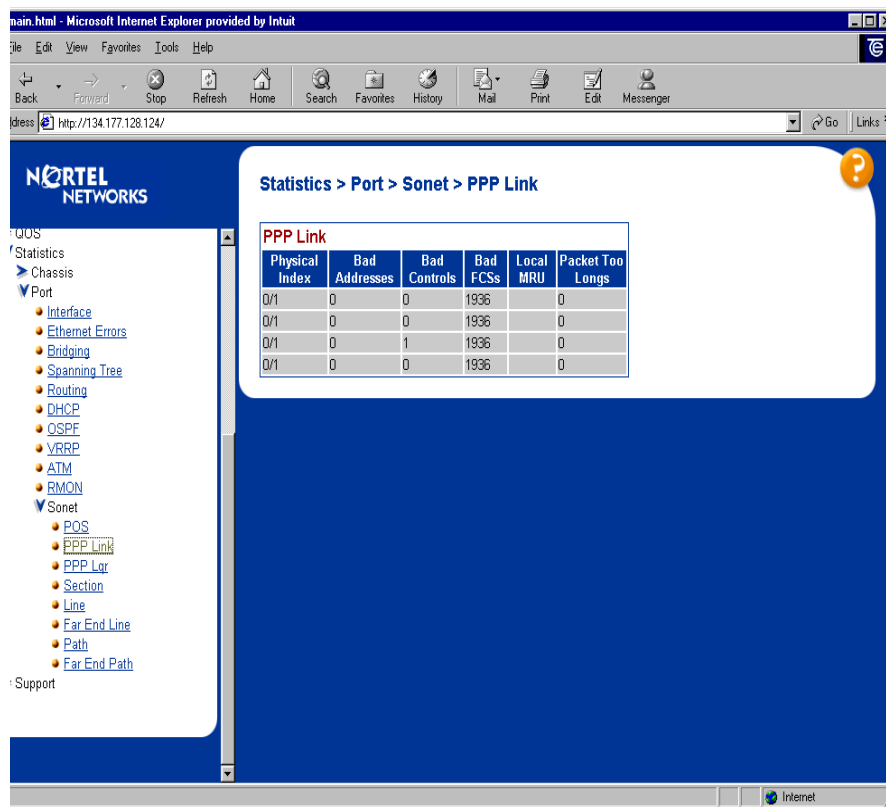
The Sonet heading contains the options shown in [Figure 64](#).

Figure 64 Sonet options



Click any of the headings to view the relevant statistics.

See [Figure 65](#) for an example of PPP Link statistics.

Figure 65 PPP Link statistics page

Appendix A

Technical Specifications

This appendix lists the technical specifications for the Passport 8683POS Module.

Standards supported

Bell Communications Research, SONET Transport Systems: Common Generic Criteria, GR-253-CORE, January 1999, Revision 2 (partial compliance)

RFC 1213, Network Management of TCP/IP-based internets, March 1991

RFC 1332, PPP Internet Protocol Control Protocol (IPCP), May 1992

RFC 1471, Link Control Protocol of the PPP, June 1993

RFC 1473, IP Network Control Protocol of the PPP, June 1993

RFC 1474, Bridge Network Control Protocol of the PPP, June 1993

RFC 1552, PPP Internetwork packet Exchange Control Protocol (IPXCP), May 1992

RFC 1661, The Point-to-Point Protocol (PPP), July 1994.

RFC 1638, PPP Bridging Control Protocol (BCP), June 1994

RFC 1989, PPP Link Quality Monitoring, August 1996

RFC 2558, SONET/SDH, March 1999

RFC 2615, PPP Over SONET/SDH (obsoletes RFC 1619), June 1999

Environmental specifications

Operating temperature:	5° to 40° C (41° to 104° F)
Storage temperature:	-25° to 70° C (-13° to 158° F)
Operating humidity:	85% maximum relative humidity, noncondensing
Storage humidity:	95% maximum relative humidity, noncondensing
Operating altitude	3,000 m (10,000 feet) maximum
Storage altitude	Up to 9,000 m (30,000 feet) above sea level
Free Fall/drop:	ISO 4180-s, NISTA 1A
Vibration:	IEC 68-2-6/34
Shock/bump:	IEC 68-2-27/29

Physical specifications

Height:	1.050 inches
Width:	12.968 inches
Depth:	10.950 inches
Weight (single module):	3.12 lbs.

Performance specifications (64-byte packets)

Mean time between failure (MTBF)	150,000 hours
Frame length:	64 to 1750 octets

Interface options

RJ-45 (8-pin modular) connectors for MDI-X interface

Safety agency approvals

UL Listed (UL 1950)
CUL CSA 22.2 No. 950
IEC 950/EN 60950
CE mark
CB Scheme Test Report and Certification
NOM (NOM-019-SCFI-1994)

Electromagnetic emissions

Meets requirements of:

US: FCC, CFR 47, Part 15, Subpart B, Class A

Canada: ICES-003, Issue-2, Class A

Australia/New Zealand: AS/NZS 3548:1995, Class A

Japan: VCCI V-3/97.04, Class A

Taiwan: CNS 13438, Class A

EN 55 022:1998/CISPR22:1997

CE Mark

Electromagnetic immunity

Electromagnetic Immunity: EN55024:1998/CISPR24:1997

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